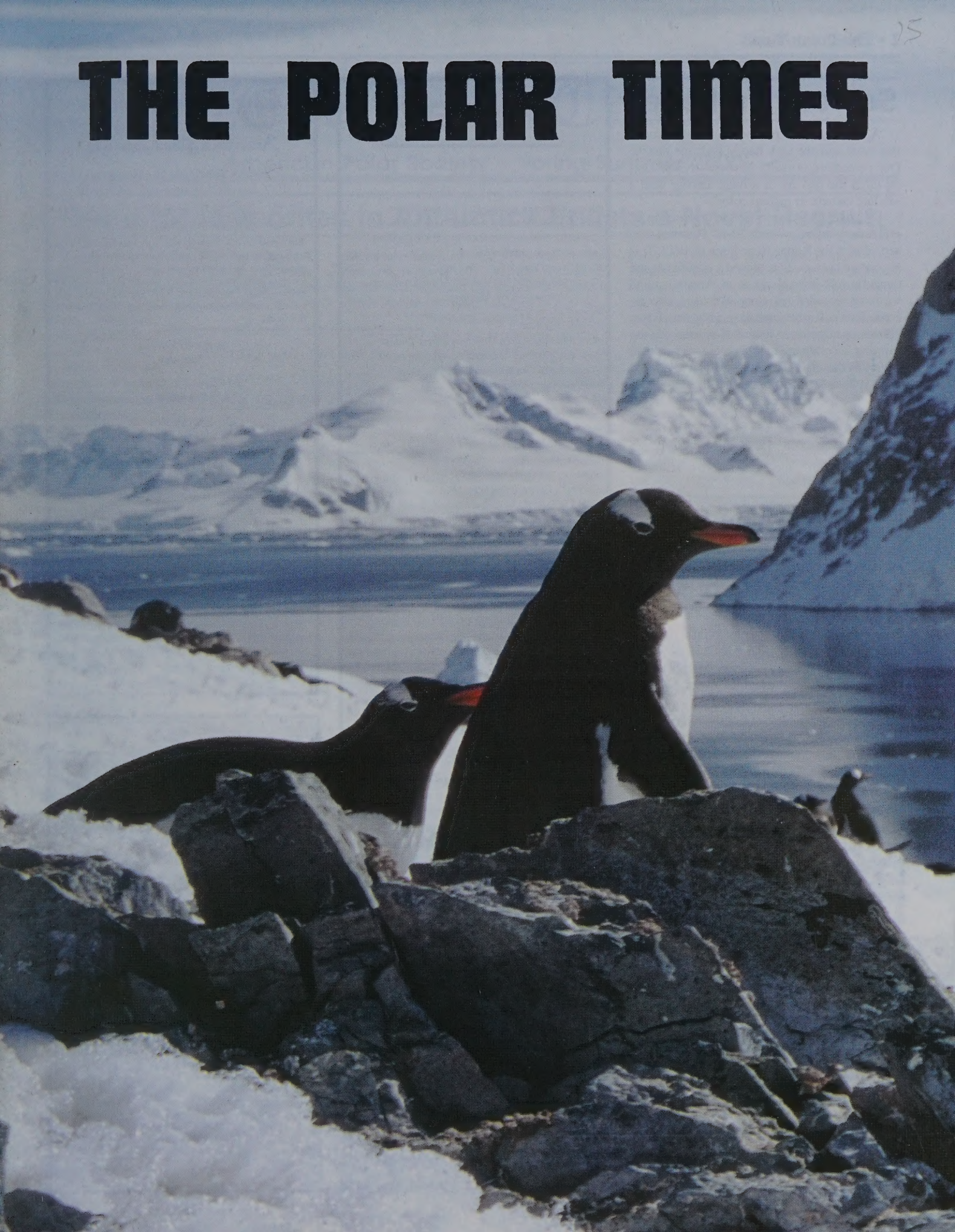
THE POLAR TIMES



Secretary's Letter

Again, we are experimenting with color in this issue and are very happy with the results. Our centerfold is really historic—NASA has captured the calving of a huge iceberg with a satellite camera in natural color.

On page 10 is a story of me conducting an oral history interview with "Pete" Peterson who served with the Ronne Expedition of 1947. This is positive because Pete played a significant and dynamic role in exploration of Antarctica and we have recorded his story. We have also recorded over 30 others and have a hot-list of over 100 more to be interviewed. However, we are carrying 12 obituaries in this issue—except for Bunny Fuchs all died with their histories untold and we have lost a bit of our heritage of exploration. We are in a race against time in this respect, but it is gratifying work every time we complete an interview.

This year has been a banner year for tourism at the poles with some 14,000 tourists sailing to the Antarctic and many more to the Arctic. We can't begin to carry all of the stories. There have been numerous trekkers to both poles, lots of sports kayakers in the Arctic, hundreds of flights to glaciers, mountain climbers at both ends of the earth and even balloon flights at both poles—perhaps Stefansson was right when he forecast that the polar regions would be a place where people vacationed.

We are holding Symposium 2000 at the University of Colorado, Boulder in October where we will be awarding Honorary Memberships to some very distinguished members. See you there! ❑

Sincerely

Brian Shoemaker

OUR COVER

View of nesting Gentoo penguins on Danco Island with the Errera Channel as a backdrop. (Photo by Brian Shoemaker, November 1999) ❑

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DELLA WESTON, Editor

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The Board of Governors has examined the dues structure of the Society and has changed the dues for 2000 as follows:

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For ease of administration we ask for annual dues to be submitted at the end of each calendar year, and we include a remittance envelope with the Fall/Winter issue of the *Polar Times*.

Since many of you send in your dues several years in advance, we tag your contributions to our membership files in our computer. This tag prints out on your membership sticker that we place on the envelope for the *Polar Times*. If it reads "expires 1299," then your membership contribution was due on January 1, 2000. If it reads "expires 1298," you are two years in arrears! If in doubt, send in your contributions, and we will credit your account by advancing your expiration date. We will honor all dues paid in advance at the old rate, but upon expiration the new rates apply.

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The Polar Times
American Polar Society • Spring-Summer 2000

Hunt for Meteorites in Antarctica Enlists a Novel Recruit

***New York Times*, 18 Jan 2000, by Warren E. Leary**—Humans have long ventured to Antarctica to study and make discoveries on the icy continent. Now a new breed of explorer—a metallic robot crammed with wires and electronics—is poised to add its name to the annals of polar history: Nomad, the meteorite hunter.

Nomad will search in patterns similar to those used by people mowing grass.

Nomad, a four-wheeled machine built by Carnegie Mellon University's Robotics Institute in Pittsburgh, is in Antarctica to see if it can discover something without human assistance. The achievement would be a first for a robot.

The machine is designed to search rock-strewn areas of ice that are known to harbor meteorites and pick out the objects that fell from space from among ordinary rocks and stones.

Dr. William L. Whittaker, the principal researcher on the Nomad project, said "Until now, explorative robots have taken pictures, gathered data and returned what they viewed to scientists, who made judgments and decisions. This time, Nomad will make its own judgments and inferences about the rocks that it encounters. If successful, it will be viewed as machine intelligent behavior."

Nomad and a half dozen engineers and graduate students who are supporting its mission arrived in December at McMurdo Station, the main United States base in Antarctica. The 1,600-pound robot, outwardly about the size of a Volkswagen Beetle, was taken by helicopter to its testing area 180 miles northwest of the base for three weeks of field trials.

Nomad is powered by a gasoline-driven generator that supplies electricity for its computers, communications, scientific instruments, high-resolution digital camera and propulsion. Each of its four metal wheels, covered with metal-studded snow tires, is powered by a separate electric motor. The vehicle, which can expand its chassis to go over obstacles 40 inches tall or use its laser range finder to help go around them, is designed to move at about 1.5 feet per second as it surveys an area.

Dr. Dimitrios Apostolopoulos, a systems scientist at the Robotics Institute, who is project manager for Nomad, said the robot would test its skills under increasingly challenging conditions. Some parts of the test area are flat ice sheets studded with occasional, distinct rocks while others are moraines, dense concentrations of rock and rubble deposited by glaciers.

Nomad will search in patterns similar to those used by people mowing grass, Dr. Apostolopoulos said, and use its camera to scan thousands of rocks for characteristics of meteorites, like shape, color, luster, size and evidence of charring.

If Nomad decides a rock is a meteorite, the robot will radio the object's exact location to the researchers using coordinates calculated by the satellite-based Global Positioning System. Later, people will retrieve the specimen to confirm or refute Nomad's findings.

The project is sponsored by the National Aeronautics and Space Administration's Office of Space Science, which is interested in sending intelligent robot explorers to other planets.

Engineers at Carnegie Mellon felt that Antarctica not only was a good place to test such robots in a distant, harsh environment, but also offered an opportunity to demonstrate their ability to do useful work.

Meteorites collected in Antarctica include not only remnants from the formation of the solar system billions of years ago, but also pieces of the Moon and Mars that were blasted away by impacts with asteroids and comets. A controversial Antarctic meteorite discovered in 1984 originated on Mars and is believed by some scientists to contain evidence of primitive microscopic life.

Nomad is being tested at Elephant Moraine, a prime meteorite collection site on the east Antarctic plateau.

Dr. Ralph P. Harvey of Case Western Reserve University directs the Nomad exploration operations in Antarctica. He said, "If Nomad finds meteorites that we might not recover otherwise, because other sites have a higher priority, then this is a great boon. Nomad will be doing real work rather than simply demonstrating some technology." ❑

(cb Peter Barretta and Abel Shafer)

POSTSCRIPT:

'Nomad' Finds Its First Meteorite

***New York Times*, 25 Jan 2000, p. D4**—The robot searching ice fields in Antarctica for meteorites has found its first one, researchers said yesterday.

The four-wheeled robot called Nomad, built by the Robotics Institute at Carnegie Mellon University, made its find Friday after about a week of test runs near Elephant Moraine, about 180 miles from the main American base at McMurdo Station.

Dr. Dimitrios Apostolopoulos, project manager for Nomad, said reports sent by e-mail from the field team said the 1,600-pound robot picked out the meteorite on an ice field during its third day of searches. Using its camera system, the robot correctly classified the meteorite.

Dr. Apostolopoulos said the robot would continue its field test for another week. ❑

(cb Abel Shaffer and Peter Barretta)

Nomad On the Ice

Engineers at the Robotics Institute at Carnegie Mellon University have designed and built a robot to search for meteorites in the harsh environment of Antarctica. NASA, which sponsored the work, eventually hopes to send such intelligent robot explorers to other plants.

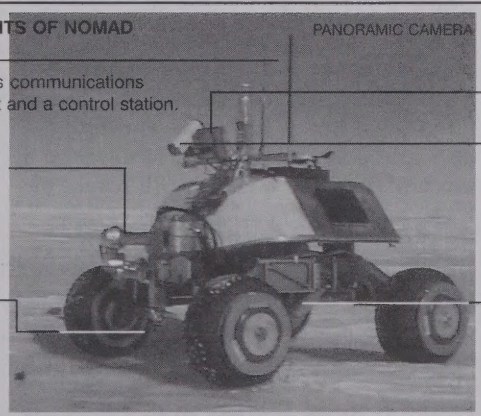
Source: Dimitrios Apostolopoulos, Robotics Institute, Carnegie Mellon University

THE INSTRUMENTS OF NOMAD

ANTENNA
Allows for wireless communications between the robot and a control station.

SCIENCE MANIPULATOR ARM
Will analyze the spectrum of light reflected on the rocks.

SPECTROMETER
Will assess their composition and whether they are meteorites.



PANORAMIC CAMERA
Captures complete 360-degree view around the robot.

LASER RANGE FINDER
Creates digital maps of the terrain it is driving into in order to calculate distances to objects and detect possible obstacles.

HIGH-RESOLUTION CAMERA
Obtains images of rocks. Visual cues like size, color and shape help to identify whether a rock is a meteorite or not.

TRANSFORMING CHASSIS
Can expand to a wider position for stability over slopes and rough terrain. The suspension system allows Nomad to raise and lower each wheel independently.

NEW YORK TIMES

US Ship To Make Sensitive Canadian Arctic Trip

Reuters, April 2000, by David Ljunggren, OTTAWA—The United States is poised to send an icebreaker on a rare trip through Canada's disputed Arctic waters, reviving the debate about who controls the crucial Northwest Passage linking the Pacific and Atlantic Oceans.

A Canadian foreign ministry spokesman said on Wednesday the U.S. Coast Guard's new polar icebreaker *Healy* would carry out a series of experiments in the Arctic ice before sailing through the Passage in June and July.

Ottawa says its waters include the Northwest Passage, a term used to describe the different possible routes through the numerous islands that dot Canada's vast Arctic which—while rarely navigable because of ice—represent by far the shortest potential sea route between Europe and Asia.

Ottawa's claim is disputed by Washington and others, who say these waters are international and open to all shipping.

"This mission is not a provocation. It was formally requested...the United States has sought and obtained Canadian consent for the voyage," Reynauld Doiron, a Canadian Foreign Ministry Spokesman, said.

But several Canadian officials will be on board the *Healy* throughout what is likely to be a politically sensitive trip.

The question of who controls the Northwest Passage is for now of academic interest since the various channels weaving through the icy Arctic archipelago are for most of the year only usable by icebreakers and special double-hulled ships.

U.S. Coast Guard Photo

Healy ***on sea trials in Gulf of Mexico***

But the issue of sovereignty could become much more important if—as some scientists predict—global warming causes the ice to melt to such an extent that shipping could use the passage for at least part of the year.

Washington has in the past stoked tension with Canada by twice sending ships through the passage without permission—the specially-designed oil tanker *Manhattan* in 1969 and the ice breaker *Polar Sea* in 1985.

In a humiliating reverse, the Manhattan got stuck in thick ice and had to be rescued by a Canadian icebreaker. The United States has also sent submarines through the passage without asking Ottawa's permission.

The 16,000-ton *Healy*, the first polar icebreaker commissioned by the U.S. Coast Guard since 1978, can carry 75 crew members and up to 50 scientists and is primarily designed as an Arctic research vessel. It can break 3.5 feet of ice at 3 knots or eight feet by backing and ramming.

Canada's belief that it has the right to regulate traffic in the Northwest Passage rests partly on a law it passed in 1970 to protect the fragile Arctic environment from spills of oil and other waste from large bulk carriers. The law allows Canada to bar from its waters any ship deemed to pose a pollution hazard.

"The (permission to go ahead) was granted based on the fact that the *Healy* met our standards," said Reynauld Dorion.

A team of Canadian navigators and pollution experts will be on board the *Healy* to ensure the ship successfully negotiates the ice floes and does not pollute the waters in any way.

Doiron said the Coast Guard had already promised to share any technical data it gathered during the trip.

After crossing into the Pacific Ocean the *Healy* will be headquartered at the 13th Coast Guard in Seattle. [See *cover story Vol. 2, No. 10 of* The Polar Times *about "Hell Roaring Mike Healy"*]. ❑ ***(cb Billy-Ace Baker)***

Canada Donors Support Epic Arctic Voyage

VANCOUVER, May 9 (Reuters)—Canada plans to reenact the voyage of the St. Roch, a Royal Canadian Mounted Police boat that was the first to sail west to east the icy passage between the Pacific and Atlantic oceans, the backers of the project said on Tuesday.

"We've got about all the operating cash we need and now can start working on the endowment (to preserve the original boat)," said Stephen Rybak, spokesman for the effort based out of the Vancouver Maritime Museum.

Canada cites the St. Roch's 28-month voyage during World War II in its claim to sovereignty over the Northwest Passage, but a volunteer effort to retrace the crossing has been snagged by the reluctance of Canadian donors to help fund it.

Rybak said Montreal-based Alcan Aluminium Ltd. (ALTO) has stepped in to pledge C$200,000 to help fund the voyage, which is set to begin July 1. A Vancouver couple has also agreed to pay C$40,000 to travel on a modern Mounties' boat that will retrace the route, according to media reports.

The St. Roch set sail in early 1940 from Vancouver on a secret wartime mission to Halifax. The wooden schooner and her crew of eight became locked in the Arctic ice and did not arrive at their destination until late 1942.

The St. Roch is stored at the Vancouver museum, but is slowly crumbling away because of fungus. The reenactment voyage, using a Mountie patrol boat and a support ship, is designed to educate Canadians about the journey and create a preservation endowment for the St. Roch.

The St. Roch also made maritime history in 1944 when it returned to Vancouver and became the first vessel to have crossed the Northwest Passage in both directions. In 1950 it became the first boat to circumnavigate North America, using the Panama Canal. The reenactment ship will also circumnavigate North America, with the entire journey expected to take six months to complete. ❑ ***(cb Billy-Ace Baker)***

In Russia's Arctic North, Politics and Nuclear Junk Are Hot

By Patrick E. Tyler, New York Times, GADZHIYEVO, Russia—The citizens of this closed military city, which hides one of Russia's nuclear submarine bases above the Arctic Circle, are staging an extraordinary civic revolt. In a referendum on whether the fleet can put a nuclear waste dump just outside the city limits, they are taking on the navy they have long served.

Sentiment is running high against the dump. This seems to be the first time that an entire town has challenged the authority of the Russian military.

Perhaps most surprising, the revolt is being led by former high ranking submarine officers who openly distrust the navy's ability to look out for their interests and protect the environment.

"We just know from our experience what can happen," said Vladimir Musatyan, 53, who has served on ballistic-missile and attack submarines over two decades. "I can tell you that when we are loading rockets into our submarines, somebody always drops one," he said.

A longtime colleague, Yevgeny Burakov, 58, could only agree. "We have nuclear weapons here, but those weapons are for the defense of the country, and this waste site has nothing to do with protecting the country. And that is why it should be placed as far away as possible from any populated area."

In Gadzhiyevo, the navy has been cutting old nuclear attack submarines in half and towing the sealed reactor compartments to an old fishing village on Sayda Bay, just west of here, since 1990 . It appears to be uncontested that the compartments are more prone to radiation leakage with each passing year. Fleet commanders have been planning to build the foundations of a permanent storage site up on the hillside above the present anchorage, and that has set off the local revolt.

"You are an American—would you allow a radioactive burial site in your town?" Mr. Burakov asked a foreign visitor.

He and Mr. Musatyan, the ex-submarine officers who have mobilized the city against the navy.

In the glory days of the fleet, the two men were no ordinary officers aboard the nuclear submarines that sailed—and still sail—from here. They were Zampolit officers, or political commissars.

An Arctic military city is fighting a nuclear dump.

In the event of nuclear war, the Zampolit officers were said to share with the captain the responsibility to authorize the launching of the nuclear -tipped ballistic weapons from the steel tubes welded into the belly of the Soviet "boomers."

"This is the first time I have heard of people from the naval community actually challenging the fleet," said Thomas Nilsen, a senior researcher with the Bellona Foundation in Norway, an environmental group that is working with Russia to solve problems with nuclear waste.

The civilian challenge has already forced provincial leaders in Murmansk to organize the first environmental studies on the proposed storage site.

New York Times

"We are Communists," Mr. Burakov added. "In fact, I am the secretary of the local communist Party committee. But we are not doing this because we are Communists. We are doing it because it is the best thing for the future of our town." ❑ ***(cb Peter Barretta)***

Canadian Pair Seeking Sponsorship For Trans-Antarctic Crossing

***Antarctic Non-Government Activity News*, 12 April 2000**—Two Canadians, Laurie Dexter and Scott Smith, are proposing to undertake a man-hauling journey across Antarctica next austral summer in a venture called the Canadian Antarctic Millennial Expedition (TCAME). Negotiations are said to be underway with prospective sponsors and while arrangements have not been finalised several companies are apparently interested in supporting the project.

The 2600 km route Dexter and Smith propose to take is similar to that used by a number of previous crossings by non-government personnel since the first such journey twenty years ago. The trek is planned as commencing in the vicinity of Berkner Island near the head of the Weddell Sea, and from there will cross the Filchner Ice Shelf, climb up the plateau to the South Geographic Pole, then descend to the Ross Ice Shelf for the final leg of the journey to Ross Island in the southwestern corner of the Ross Sea.

Departure from Berkner Island is put at the end of October, and if all goes according to plan the SGP would be reached close to New Year's Day, with arrival at Ross Island probably around mid-February. Planned timings from the SGP northwards to Ross Island are similar to those proposed by Liz Arnesen and Ann Bancroft who are also proposing to cross Antarctica to Ross Island via the Pole at around the same time. The Arnesen-Bancroft traverse, which will involve a trek some 400 km longer overall than the Canadians, is to start 1400 km to the west in Queen Maud Land.

Laurie Dexter was a member of a Soviet-Canadian team that skied across the Arctic Ocean from Russia to Canada in 1988. In carrying out the crossing of Antarctica Laurie says that one of his aims is to be the first person to cross both the Arctic basin and Antarctic continent on foot. ❑

After 70 Years, a Smoother Trip

Ethan Schartman

Adm. Richard E. Byrd made the first flight to the South Pole on Nov. 29, 1929. Today, such trips are almost routine. The crew of this LC-130 unloaded cargo at the pole and then stopped for dinner.

***New York Times*, 7 Dec 1999, p. D5**—Seventy years ago last week, Adm. Richard E. Byrd became the first person to fly over the South Pole, in a ford trimotor aircraft that had a speed of about 90 miles per hour.

Byrd had to navigate by sighting the sun, because the effects of the magnetic pole made his compasses useless.

And because his plane could not land at the pole, he simply dropped an American flag to prove he had made it to 90° south latitude.

On the anniversary of Byrd's flight, a crew from the New York Air National Guard flew a ski-equipped LC-130 aircraft on a supply mission to the pole. (The Guard's planes can fly at 250 miles per hour, 26,000 feet up, and carry computers, satellite links, radar and a gyroscope.)

And when the crew landed, they relaxed in the buildings of the Amundsen-Scott South Pole base, where the galley has won renown for having "the best food on the continent." ❑ *(cb Peter Barretta and Peter Anderson)*

Byrd Polar Research Center/Ohio State University

Admiral Byrd flew this aircraft, the* Floyd Bennett, *over the South Pole.

Cool Design Idea Is Put to the Test

***New York Times*, 18 Jan 2000, p. F2, by Warren E. Leary**—Imagine trying to do wheelies on a bicycle at the frigid South Pole. Depending on one's point of view, this would take extreme biking up—or down—to a new level.

Such an idea is no longer fantasy. Two bicycles designed and built specifically for the harsh conditions of Antarctica are to undergo formal testing at the South Pole this week, part of a program to make life a little easier—and perhaps a bit more fun—for those who spend long, dark winters at the remote outpost.

Called the Ice Prowler, this custom model bicycle was engineered and built by advanced design students at the Art Institute of Pittsburgh.

Stephen M. Butler, head of the graphics design program at the institute, is in Antarctica to test the bicycles, where he will evaluate their traction, control and ease of use.

People stationed in Antarctica have tried bicycles before but with limited success. Conventional mountain bikes with 2.5-inch-wide tires work during the summer season on well-traveled paths but bog down in the winter's drifting snows and oppressive cold. Winter temperatures averaging 76° below zero also result in plastic parts cracking and cables breaking, disabling brakes and gearshifts.

Ethan Schartman

A technician rides a bicycle prototype, called an "Ice Prowler," around the ceremonial marker for the South Pole.

A practical reason for having bicycles in Antarctica is to help staff members at the university consortium's observatories, which are three-quarters of a mile from the main station.

The challenging Ice Prowler project has taken two years between conception and putting two bikes on Antarctic ice.

The students designed and tested new types of frames, wheels, gears, seats and other components until settling on the best parts for a low-maintenance bicycle that could be used by people clad in cumbersome cold-weather gear riding outside in extreme temperatures.

The students settled on a squat-looking design built around aluminum mountain bike frames.

They opted for high, wide handlebars and stubby-looking metal wheels fitted with vulcanized rubber golf-cart tires with treads cut in a special V-shaped pattern. The bikes also have a simple, single-speed gear system, quick-release switches that let gloved hands easily adjust seat and handlebar height, and a metal disc brake operated by a handlebar lever.

After the trials, the researchers will leave one or both bicycles at the pole for the coming winter season and hope to send a refined production model that has all the bugs worked out next year.

Bill Farrell, an industrial design instructor who supervised the project, said, "The real value of this is the experience the kids are getting out of it." ❑ *(cb Peter Barretta)*

Canadian Arctic Lures Well-Off Adventure Tourists

By David Ljunggren

25 April 2000, AUYUITTUQ NATIONAL PARK, Nunavut (Reuters)—If you yawn at the thought of a Mediterranean cruise and couldn't care less about Caribbean beaches, how about climbing a frozen waterfall or helping to skin a seal?

The enormous new Canadian Arctic territory of Nunavut is selling itself as a niche market for prosperous, sensitive tourists eager to experience something out of the ordinary.

The options it presents range from hiking through remote, beautiful national parks to riding a dog-sled, watching—or hunting—animals such as polar bears or cruising through chilly seas staring at icebergs.

Something else on the menu for the intrepid tourist with a steel stomach is meat carved from a fresh seal. This is freely available at the skinning contests held every April during Toonik Tyme, a traditional festival in the capital Iqaluit.

Less daring souls can spend time learning about the culture and history of the native Inuit people, who spent centuries living off the land before being moved into permanent communities in the 1950s and 1960s.

"We have identified the type of traveller most likely to visit Nunavut as well-travelled, in their 40s or 50s, with an upper level of income, looking for a unique experience," said Madeleine Redfern, head of Nunavut Tourism.

Nunavut—which consists of just 27,000 people scattered over 770,000 square miles (2 million sq km)—is in no position to deal with a sudden influx of tourists.

Most of the few thousand visitors who make it to Nunavut each year come in the brief summer season to hike through national parks like Auyuittuq, about 200 miles (320 km) north of Iqaluit, take in some Inuit culture and watch the animals.

"People want to see beluga whales and narwhals, polar bears, musk oxen and walruses. There is an abundance of birds that migrate here during the summer," Redfern said.

"There are soft and hard adventures ranging from camping and hiking to kayaking at sea. There is rock-face climbing and treks to the North Pole," she added.

Auyuittuq, one of three national parks in Nunavut, attracts around 400 visitors a year and chief warden Richard Cherepak says it could handle more.

"I think we'd welcome a rise in tourism as long as we determined it was sustainable and had no negative impact on the environment. We don't just want 4,000 people here," he said.

Cherepak worries about the park's fragile ecology and delicate issues such as disposing human waste. Another factor limiting the number of visitors is the amount of equipment they need to camp in or hike through the park, which has virtually no infrastructure.

"We get people who are unrealistic about themselves and underestimate what Arctic travel involves," said Cherepak. "Every year we get a few who have bitten off more than they can chew, but luckily they tend to realise this early on. We haven't had a major public safety problem for a long while."

Nunavut is certainly no place to fool around. In July 1998 two experienced Toronto kayakers drowned near the northern hamlet of Pond Inlet when they suddenly hit rough water.

"That's the kind of accident we think is preventable if people go out with experienced, knowledgeable and licensed guides," said Redfern. ❑ *(cb Billy-Ace Baker)*

Arctic Methane Study Approved

***Washington* Post, 14 April 2000, p. A4**—Deep under the ocean floor and the Arctic permafrost are ice-like deposits of frozen methane with energy potential equal to more than twice that of all other fossil fuels combined. Congress is now ready to put up nearly $50 million to find out if this energy source can be developed without setting off a cataclysmic warming of the globe.

The House approved by voice vote a measure directing the energy secretary, working with the secretaries of interior, defense and commerce, to study both methane hydrates as an energy source and the technologies needed for safe, efficient development.

The stakes are high in an age when gas prices are soaring and the nation is overly dependent on foreign oil, said the bill's chief sponsor, Rep. Mike Doyle (D-Pa.). ❑ *(cb Peter Barretta)*

Polar Climate Shift

***Fairfax (VA) Journal*, 24 Dec 1999, p. A2**—Scientists announced that frigid arctic weather is not moving as far south during winter in the Northern Hemisphere—a phenomenon that may be causing higher temperatures throughout Europe and Asia as well as a marked decrease in rainfall in Spain. The researchers attending the American Geophysical Union's annual meeting theorized that shifting polar winds may be also causing the recent damaging winter weather across Europe and North America. Severe winter weather occurs when higher temperatures in the lower latitudes meet up with the frigid conditions emanating from the polar region, generating a high-altitude jet stream that draws heat and moisture from the Atlantic and pacific oceans. The group reported that the "polar vortex" has become tighter since 1970 and that winds in the upper atmosphere are blowing in a more constrained and powerful circle around the hemisphere. ❑ *(cb Peter Barretta)*

Ozone Depletion

***Fairfax (VA) Journal*, 7 Apr 2000, p. A2**—Latest measurements of the earth's protective ozone layer indicate that it was 60 percent thinner than normal over the Arctic during the first three months of this year. The research was carried out during the Arctic winter in the far north of Sweden by 500 scientists and technicians from numerous countries, using satellites, aircraft, high-altitude balloons and ground-based monitoring stations to measure damage to the layer. Research spokeswoman Piia Huusela stressed that the report did not indicate a hole in the ozone layer similar to the one that has opened over the Antarctic, but a thinning of ozone in the stratosphere. "We are not even close to a hole but it nevertheless alarming," she said. Ozone in the upper atmosphere is the prime filter for damaging ultraviolet-B radiation from the sun, which increases the risk of cataracts, skin cancer and glaucoma, as well as contributing to global warming. ❑ *(cb Peter Barretta)*

Radar Station in Arctic Prompts Spying Charge

***Washington Times*, 19 Mar 2000, p. C10, by Jamie Dettmer, MOSCOW**—A powerful radar site capable of spying on Russian ballistic missile launches that the United States is building on Norway's arctic frontier has become the latest source of tension between Washington and Moscow.

Russian officials say the radar station, located 35 miles from the Russian border and due to be completed this summer, violates the 28-year-old Anti-Ballistic Missile Treaty that forbids either the United States or Russia from building a national missile defense systems.

The Russians claim the radar station in the Norwegian town of Vardo is already being used to snoop on missile launches from Russian test sites on the Kola Peninsula, despite previous American assurances that the station was being built only for civilian purposes.

They also argue the installation is the "last link" in a chain of radars stretching across Europe and North America that would form the eyes and ears of a missile defense system the United States is considering constructing.

U.S. and Norwegian spokesmen deny the Russian complaints. The facility, they say, is merely tasked with tracking satellite-endangering debris floating in space.

"The radar is not part of any future United States missile defense program," said Norwegian Defense Minister Eldbjoerg Loewer.

Dismissing the denials, the Russian Foreign Ministry has warned Norway that it is abusing principles of "good neighborliness" by operating the Vardo site near the Russian border.

Norwegian officials do not deny that the Vardo station plays some espionage role. Mrs. Loewer, said the facility has an intelligence function but she refuses to go into details, saying the espionage tasks are classified.

The station also could be used to monitor individual Russian ballistic missile tests. In a recent interview, Brig. Gen. Ragner Bratland, Norway's defense attaché here, acknowledged that the radar site has that ability.

The Vardo facility, however, is well located to snoop on Russia's busy cosmodrome at Plesetsk, operated by the country's strategic Nuclear Missile Force. The Russian Northern Fleet, which runs most of the nuclear submarines that are capable of launching ballistic missiles, is also close by. ❑ ***(cb Peter Barretta)***

Postscript:
Moscow, 25 June 2000 – Russia got a swift rebuff recently after it offered its experts to help operate the U.S.-built radar station in Norway's high Arctic.

Shackleton's South Georgia Traverse Again Retraced

***Antarctic Non-Government Activity News*, 12 April 2000**—Sir Ernest Shackleton's historic 1916 crossing of South Georgia was retraced for the second time in less than two months when three mountaineers completed the journey over a three day period in mid-April. This month's crossing follows the seven day trek by the 'Shackleton 2000' expedition along the route after its reenactment of Shackleton's open boat journey from the Antarctic Peninsula to South Georgia last January-February.

The latest traverse was conducted by the noted mountaineers Reinhold Messner, Stephan Venables and Conrad Anker, who were part of a group involved in filming two versions of the story of Shackleton's 'Endurance' voyage, one a documentary for broadcast on the U.S. Public Broadcasting System, and the other a large format forty-minute feature film for exhibition in IMAX® theaters world wide. Both films are scheduled for release in 2001.

Filming on the island earlier this month was supported from the *Akademic Shulyekin*, the same vessel used for the first phase of operations last October-November. *Shulyekin* had left Montivideo, Uruguay, on 5 April with twenty five film and logistics support crew on board, and arrived at South Georgia five days later. Messner, Venables and Anker were deployed from the ship at King Haakon Bay, Shackleton's landfall in 1926, and started their traverse from there on 11 April. Cameraman Mike Graber and two mountain guides accompanied the three mountaineers for the first day of their trek before returning to King Haakon Bay and travelling with the ship on its journey around the island to the northern coast.

The three climbers found the route up over Trident Ridge and across the Crean and Fortuna Glaciers significantly different from the conditions that existed in Shackleton's time. According to Messner the glaciers in the area are far more broken up than was the case eighty-four years ago when Shackleton was there, and long detours were frequently needed around the most dangerous areas. Messner was reported to have suffered a broken foot during the crossing of the Crean Glacier however this did not appear to have impeded his ability to complete the journey. The trio camped on the Crean Glacier overnight on the 12th and the Fortuna on the 13th, before descending to the former whaling station Stromness on the morning of 14 April.

After their arrival at Stromness the three climbers boarded the 'Shulyekin' which was waiting offshore. Filming operations continued over the next few days, the ship visiting Grytviken before departing for Montivideo where it was scheduled to arrive on 21 April. ❑

Arctic Group OKs Pollution Plan

The Associated Press, 23 Nov 1999, WASHINGTON (AP)—The eight-nation Arctic Council approved a plan designed to eliminate pollution from the region, the State Department said Tuesday.

Approval came at a three-day department meeting last week attended by officials from the eight countries and 150 participants. The meeting was in preparation for a conference of ministers in Alaska next year.

The eight members are Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States.

The U.S. delegation demonstrated new techniques for providing health care to residents of remote regions of the Arctic and offered a proposal for ecological tourism, State Department spokesman James P. Rubin said.

The delegation also made a presentation on the effects of global climate change and increased ultraviolet radiation on the Arctic region. ❑ ***(cb Billy-Ace Baker)***

Northern Lights Color Winter Sky

PHOTO: LARRY BLEIBERG. REPRINTED WITH PERMISSION OF THE DALLAS MORNING NEWS

The northern lights lure tourists to the Far North.

***Dallas Morning News*, 6 Feb 2000, by Larry Bleiberg, FORT McMURRAY, Alberta**—To Eskimos, the dancing lights were spirits on their way to heaven. To Siberians, they were children playing soccer in the sky with a walrus skull. To biblical scribes, they were battling horsemen.

Standing outside in the middle of the night in northern Canada, I could understand how these legends started.

Something spectacular was transforming the sky above me. Wide plumes of light hung frozen in the sky. When I turned away and looked back, they'd moved.

There is something fundamentally spiritual about celestial lights. And the fact that you can now book a trip to see them doesn't make it less so.

The best place to see the lights is the Far North. The best season is late fall through early spring—when the overnight low can drop to 40 below.

Fort McMurray, for example is the northernmost city in Alberta, a 70-minute flight or six-hour drive from Edmonton.

Every winter, hundreds of tourists come to this tiny spot.

Fort McMurray brags that it has as many clear days as other prime aurora-watching sites, but because it's farther south, its average overnight low is slightly warmer. That means January visitors might watch in temperatures of 14 below zero, instead of the average 19 below of Fairbanks or 24 below of Yellowknife, Northwest Territories.

Outside this auroral band—which centers roughly on the 65th parallel—sightings are much less frequent. They appear a few times a year in the northern United States, and less often as far south as Texas. About once a decade they can be observed in Mexico or the Caribbean.

Given those odds, the aurora-intrigued must head to where the lights are. In Canada and Alaska, the most frequent tourists are from Japan, where auroras have special significance.

"We get a lot of office ladies—28 to 30, not married," John Louw, owner of Alta-Can Tours, said. "They seemed to think the aurora will change their lives.

Some visitors are honeymooners. In Japan, it's believed that a child conceived under the northern lights will be blessed.

Medieval scientists believed the lights were reflections of sunlight and named the phenomenon for Aurora, Roman goddess of the dawn.

Medieval scientists believed the lights were reflections of sunlight and named the phenomenon for Aurora, Roman goddess of the dawn.

The term *aurora borealis* refers to the lights in the Northern Hemisphere, *aurora australis*, to those in the south. The lights are caused by solar storms. Electrons head toward Earth and are drawn by magnetic forces to the north and south poles. When they arrive, the sky turns into a giant screen, where the energy from the former solar flares sketches patterns about 50 miles above the ground.

The color and movement of the lights are impossible to predict. Most often the lights are white and green. Occasionally the sky turns blood-red.

Guide Bill Rockwell has watched visitors' reactions. "The men become excited and start talking rapidly," he said. "A lot of your ladies become visibly emotional."

Our group tended to the former. We whooped and hollered until 1 a.m., when clouds ended the show. We piled into the van, chilly but mesmerized. I peeked at my watch and started counting the hours: just 21 more until we sky-watched again. ❑ ***(cb Peter Anderson)***

Arctic Leaders Oppose Russian Animal Rights Bill

MOSCOW, 23 Dec 1999, (Reuters)—Governors in two arctic regions have urged the Russian President not to sign an animal rights bill protecting seals because it would kill an important fur industry in Russia's north, Itar-Tass news agency reported on Thursday.

The State Duma lower house of parliament passed the 22-page bill, which forbids a whole range of activities considered cruel to animals, earlier this month. The governors said seal hunting would be one of the practices banned.

The upper house of parliament must still pass the bill and Yeltsin sign it to make it law.

Tass quoted a spokeswoman for the governor of the Arkhangelsk region as saying that he and his counterpart in the Murmansk region had told Yeltsin that many local jobs would go if the bill were passed.

"More than a thousand people involved in the hunting and skinning of seals will lose their jobs in villages in the Arkhangelsk region," Svetlana Gorlanova was quoted as saying.

Furs are worn by many people in Russia, where winters are usually very cold. Many people say furs are necessary in the north of the vast country where temperatures often plunge to below minus 30° centigrade. ❑ ***(cb Billy-Ace Baker)***

Warming Held Threat to Polar Bears

***Washington Times*, 21 Nov 1999, p. C12, AMSTERDAM**—Polar bears face starvation because the Arctic sea-ice season is getting shorter because of global warming, Greenpeace said last week.

The Amsterdam-based environmental organization quoted a new study by scientists from the Canadian Wildlife Service into polar bears of the northern Hudson Bay region. It concluded that the sea-ice season is three weeks shorter than 20 years ago.

Though a significant polar bear population decline has not begun, male and female polar bears return to land after the shortened hunting season with a lower body mass and are producing fewer offspring, the study said.

The main source of food for the polar bears, which often fast for six to eight months per year, is the ringed seal, which the bears only hunt in the sea-ice season. ❑ ***(cb Peter Barretta)***

Polar Oral History Program Launched

by Jim O'Leary

JIM O'LEARY

Brian Shoemaker interviewing "Pete" Peterson, 75, retired USMC colonel, about his experiences while with the 1947 Ronne Expedition to Antarctica.

Brian Shoemaker, Secretary of the American Polar Society, is on a quest.

Working with a grant from the National Science Foundation together with Dr. Raimund Goerler, Archivist of Ohio State University, Shoemaker is taking oral histories of older members of various Arctic and Antarctic expeditions. He will be traveling throughout the country to locate and interview these early pioneers of exploration.

Shoemaker came up with the idea in 1995 and began work on the project in 1999 Shoemaker believes the project is vital.

"It is important to get in touch with these men and learn what the expedition meant to them," said Shoemaker once the former commanding officer of all military forces in Antarctica.

To date, he has interviewed 20 pioneers , but there are hundreds more that have tales to tell. He hopes the project will last as long as it takes for him to interview as many people as needed to complete the oral history of Americans role in polar exploration.

"Time-wise, we need to get in touch with as many of the old timers as possible," said Shoemaker. He says he is looking for workers as well as the scientists and leaders of the expeditions. At the current time he is focusing on those who served prior to 1960—the rest will follow in what should develop into a perpetual interview program.

Questions in the interview include—What led you to volunteer to participate in an expedition to the Arctic/Antarctic? Please relate your experiences? What effect did the experience have upon your life afterward? In retrospect, would you do it again?

The interviews may last as long as six hours.

For more information, or if you know of someone who should be interviewed by Shoemaker, contact him at 541-756-9013 or write him care of PO Box 591, North Bend, OR 97459. ❑

Antarctic Swim Club Recalled

The Royal Vanda Swim Club in Antarctica was probably the southernmost swimming club in the world, with the most bizarre entry rules.

To qualify, members had to strip in subzero temperatures and immerse themselves in Lake Vanda, before streaking back to nearby Vanda Station, a former New Zealand scientific base where the swimmer had to sign the Initiates Roster in the presence of the assembled Vandals before being able to don their clothes. For decades there was no shortage of polar plungers, throwing clothes and caution to the wind—all for the sake of tradition, testing mettle and earning a member's badge.

But the unique swim club on the Antarctic continent is one bastion that did not make it into the 21st century. It closed unceremoniously, nearly 40 years after it began, having recruited more than 2300 members. The club was operated by science teams from New Zealand in their off-duty hours, however, the majority of members were American workers and scientists from the U.S. base at McMurdo Sound.

Rising lake levels and new environmental protocols closed the "clubhouse", Vanda Station, which attracted thousands of visitors to the windswept Wright Valley.

There was also concern that bugs from humans may contaminate the pristine lake waters. The station and 10 tonnes of contaminated soil were removed in a military-style operation called White Safari in 1994-95.

An Antarctic historian and Christchurch author, David Harrowfield, has written a book to ensure the station's folklore and scientific achievements, are not forgotten.

He said the remote base was an important part of New Zealand-Antarctic heritage, with its own unique culture. ❑ (cb Billy-Ace Baker)

Norway To Compensate Herders

The Associated Press, 3 Jan 2000, OSLO, Norway—Norway on Monday offered to compensate Sami reindeer herders for injustices suffered during many years of "Norwegianization."

The Sami, once called Lapps, are the indigenous people of Europe's arctic. Until recently, Norway's policy had been to assimilate the minority group into the nation's Scandinavian culture.

The government proposed the creation of a $9.3 million fund to compensate the arctic dwellers for damage done to their culture. If approved by parliament, the fund would be managed by the Sami Parliament.

The proposal followed a promise by Prime Minister Kjell Magne Bondevik in his New Year's Day speech to the nation on Saturday.

"The Sami people (now) have a completely new status, and I can today announce that the government will propose a special fund as collective compensation for the damage the policy of Norwegianization caused," he said in that speech.

The Sami are believed to have originated in central Asia before migrating north at least 9,000 years ago—long before the arrival of the first Scandinavian settlers.

For more that 200 years, governments tried to wipe out their culture. However, in recent decades, assimilation has been replaced by a program of nurturing the Sami culture, which has its own language and traditions.

In 1997, Norway's King Harald V publicly apologized on behalf of the nation for its treatment of the Sami.

There are an estimated 70,000 Sami spread across northern Norway, Sweden, Finland and Russia. ❑ ***(cb Billy-Ace Baker)***

Honorary Members of the American Polar Society Selected

The Board of Governors of the American Polar Society is honored to announce the selection of six men who have distinguished themselves in the polar regions for Honorary Membership in the Society. For the Class of 1999 Dr. Knut Aagaard, VADM George P. Steele and CDR Edward M. Ward have been selected. The Class of 2000 is composed of Dr. Arnold L. Gordon, Dr David H. Elliot and BGEN Keith R. Greenaway. All will be awarded their Honorary Membership Medallions at the American Polar Society Symposium Awards Banquet at the University of Colorado on the evening of the 5 October 2000. Polar Society members are cordially invited to attend the ceremony.

Class of 1999

Vice Admiral George P. Steele, USN (Ret.)

Admiral Steele trained in RADM Rickover's Naval Nuclear Propulsion Program and became the first Commanding Officer of the nuclear attack submarine *USS SEADRAGON.* Under his command *SEADRAGON* made the first survey of the Northwest Passage under the ice in 1960. During this complex and dangerous voyage *SEADRAGON* discovered, sailing through Parry Channel, a year-around passage under the ice. *SEADRAGON* also became the first submarine to sail under icebergs doing so on 22 occasions during the voyage. This historic voyage is recorded in Admiral Steele's book *Seadragon: Northwest Under the Ice, in 1962.* Admiral Steele retired from the US Navy in 1975 as a leading Arctic explorer by nuclear submarine. ❑

Dr. Knut Aagaard

Dr. Knut Aagaard is an internationally renowned Arctic oceanographer who has conducted field research throughout the Arctic Ocean and marginal seas such as the Bering, Greenland and Iceland seas. From 1961 to the present, Dr. Aagaard has conducted his physical oceanographic research on more than 40 polar ship cruises and Arctic drift stations. This work has resulted in more than 150 papers, books, reports and other publications of note. Throughout his career he has been a tireless participant in international and U.S. committees regarding Arctic research (including the Polar Research Board, NSF, Arctic Ocean Science Board, UNOLS, American Geophysical Union, the International Arctic Research Committee and many others). Dr. Aagaard continues his work on unlocking the mysteries of the Arctic Ocean and remains one of the world's most respected Arctic oceanographers. ❑

Commander Edward M. Ward, USN (Ret.)

Commander Ward flew PBY/PB4Y2s during World War II serving with distinction in both the Atlantic and Pacific fleets. He directed Project SPAM in 1946 from Port. Barrow and led an airborne magnetometer survey from the Brooks Range to the Arctic Ocean. He was Commander of Project Ski-Jump during 1951-52. where his team established 18 oceanographic stations on ice floes. These flights, which preceded the establishment of ice station T-3, laid the groundwork of all future U.S. Arctic ice stations. Moving to the Antarctic in 1955, he became the first Commanding Officer of VX-6, the Navy's Antarctic Support Squadron. He spent Deep Freeze 1 and 2 "on the ice" directing all the historic exploratory flights, including Gus Shinn's landing at the South Pole, six long range exploratory flights across Antarctica and Admiral Byrd's last flight to the South Pole. Commander Ward retired in 1970 as one of world's leading polar aviators. ❑

Class of 2000

Dr. David H. Elliot

Dr. Elliot came to the US in 1961 as a postdoctoral researcher at the Institute of Polar Studies, The Ohio State University. He has remained at Ohio State as a Professor of Geology and from 1973-89 was the Director of the Institute of Polar Studies. Professor Elliot's research involves volcanism and tectonism, fossils, stratigraphic interpretations, and Gondwana reconstruction. He is responsible for several key fossil finds related to plate tectonic theory, and he produced maps and interpreted the geologic history for many areas of Antarctica. In these endeavours he has covered much of the continent, including Beardmore Glacier, Queen Alexandria Range, Antarctic Peninsula, North Victoria Land, and the Falkland Islands. Results of his pioneering work, supported by more than 26 grants, include more than 190 papers, reports and other publications. Dr. Elliot's nearly 40 years of Antarctic geologic research and dedicated service to science embody the highest ideals of the American Polar Society. ❑

Brigadier General Keith R. Greenaway, RCAF (Ret.)

General Greenaway joined the Royal Canadian Air Force in May 1940 and served as a navigation instructor during World War II. During the winter of 1945-46 he flew with the US Navy and in 1946 was one of the navigators aboard the first US military aircraft to fly over the North Pole. He helped develop the RCAF's Twilight Computer, an aid to high latitude navigation, which was widely used by other air forces. He also carried out experimental flights in the Arctic, including numerous flights to the North Pole. In 1954 he served with the USAF's Strategic Air Command on many high latitude flights aboard B47 and B52 aircraft. In August 1958 he assisted the U.S. Navy in navigating the USN ZPG-2 airship to ice island T3 (which he discovered in April 1947). After retirement in 1971, he began a long association serving as Senior Science Advisor to Canada's Department of Indian Affairs and Northern Development. He is a fellow of several aeronautics organizations and the Arctic Institute of North America. In 1976 he was appointed a Member of the Order of Canada. ❑

Dr. Arnold L. Gordon

Dr. Arnold Gordon's name is synonymous with Antarctic/Southern Ocean oceanography, as he has conducted physical oceanographic research on the oceans of the entire Southern Hemisphere; his published record includes more than 170 papers, volumes and chapters. Early in his career, Dr. Gordon sailed aboard the USNS *ELTANIN* throughout Antarctic waters; he has conducted research at sea on more than 25 cruises and, for a majority of these, he was Chief Scientist. Notable is his work in the Weddell Sea in 1981 (aboard the Soviet polar ship *MIKHAIL SOMOV),* in 1986 (aboard the German *POLARSTERN)* and in 1992 *(NATHANIEL PALMER).* His pioneering work in the Southern Oceans is a lasting legacy that has greatly influenced the direction of today's research in polar oceanography. ❑

Centerfold Story

Birth of an Iceberg

by Brian Shoemaker

You are witness to the birth of a giant! Our centerfold photo has captured the B-15 iceberg in the process of calving from the Ross Ice Shelf in Antarctica. Get out your Antarctic maps—this behemoth is literally half the length of Ross Barrier 185 x 23 miles. Or if you like larger than the State of Delaware—imagine Delaware breaking away from the East Coast and floating away!

A 208 mile long iceberg was reported by the *USS Glacier* in the northern Ross Sea in 1956 (See Polar Times Vol. 1, No. 43), however, there were no satellites around at the time to confirm it and certainly no one was there when it calved to view it in total.

The image was taken on March 28th by NASA's Terra satellite (see http://modarch.gsfc.nasa.gov/MODIS/MODIS.html) that was launched on December 18, 1999. ❑

Russia To Extend Life of Nuclear Icebreaker Fleet

Associated Press, 28 April 2000, by Robert Eksuzyan, MOSCOW—Russia will renovate its entire fleet of five nuclear-powered icebreakers plying the vital northern shipping route by 2003 by extending the life-span of their nuclear reactors, the route's director said on Friday.

Anatoly Gorshkovsky told Reuters in a telephone interview that the administration of the northern route had been allocated funds to rehabilitate the ship's reactors, extending their service life by 25,000 hours each.

"All five icebreakers are working now in good condition, and under a programme we discussed with President Putin in Murmansk earlier this month we decided to prolong the service life of each reactor to 175,000 hours from 150,000."

Work will start on the first ship, *Arktika*, in a week's time, Gorshkovsky said.

He said there had been a debate over whether to recommission the ageing fleet or to build new ships, and time rather than money had proved the decisive factor.

"There were calls for building new icebreakers but it would take seven years to build the first one and we simply cannot wait that long," he said.

"They all escort shipping from Murmansk to Nakhodka and Vladivostok all year round, including foreign ships. The annual volume of freight carried on the northern route is two million tonnes, and when we have all five icebreakers up and running in 2003, this will rise to six million tonnes."

He said the northern shipping route should be used more intensively by shipping convoys going to Japan, China, South East Asia countries and even further afield.

"The programme has been approved and money allocated by the government, and with the development of oil and gas deposits in the Arctic ocean we hope to revive the northern route which would help develop Russia's economy as a whole," he added.

The icebreakers are also vital for getting fuel and food to remote communities dotted along Russia's north coast, most of them home to gold and timber workers and deer breeders.

As well as the five ships to be renovated, one additional nuclear icebreaker is currently being built.

The 50 Let Pobedy (50th Anniversary of Victory), which will be the world's most powerful icebreaker at a cost of $92 million, is under construction at the Baltiisky Zavod shipyard in St. Petersburg.

St. Petersburg newspaper Delovoy Petersburg reported last week that even though the ship is 75 percent complete, it will not be finished for another three years. ❑

Absence of 'Midnight' Doesn't Darken Spirits

***New York Times*, 1 Jan 2000, p. A2, by Malcolm W. Browne, SOUTH POLE**—With the midsummer sun standing high over the South Pole, painting its vast featureless snow fields with light so intense it hurt the eyes, scientists and support staff began celebrating the new year along with a plane load of tourists and seven intrepid skiers.

Midnight itself was almost meaningless; at this time of year, the sun shines 24 hours a day.

A New Year's Eve party began at 8 p.m. New Zealand time (America's Antarcticans set their clocks to Christchurch) in a garage at the Amundsen-Scott South Pole Station, which is in one of the tunnels leading to the cavernous, snow-covered dome that shelters many of the station's activities.

"There were quite a few colorful costumes," said Ed Blain, the area manager for the station. "There was a live band and drinks and champagne for all. The New Year's struck with quite a wild crowd."

The tourists, who flew in on a specially equipped Twin Otter aircraft, left later for a campsite in central Antarctica. The skiers, four from Singapore and three from Britain are camping near the polar station.

And staff members began the annual placing of the stake marking the latest position of the true geographic South Pole.

Although the South Pole itself is stationary, the two-mile-thick ice sheet covering the rocky continent slips gradually, moving generally seaward about 30 feet a year.

So each year, on New Year's Day, a new stake is driven into the ice over the latest South Pole position. Affixed to the stake is an ornamental medallion designed and made by shop workers during the three-month-long winter night at the Pole.

The holidays, which come just about halfway through the South Pole summer research season, are typically an occasion for play.

In past seasons, artists have used chain saws and other tools to create vast ice sculptures menageries, and scientists and support staff who normally work virtually nonstop on astrophysics research, astronomy, climate studies and other projects, take time out for silly games and contests, like chili cookoffs held outdoors in temperatures of 20 below. This year there was a pool championship, with 27 station personnel playing.

Some years, casualties or even deaths in the previous winter have dampened spirits. But this year, except for the station's doctor, who had to be evacuated several months ago after she discovered she had breast cancer, there have been few problems.

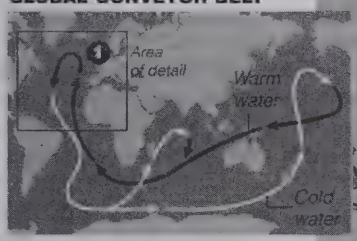
"Now that the New Year festivities are over," Mr. Blain said, "we are hoping for a quiet, restful season. We have 45 days left." *[Malcolm Browne is the former president of the American Polar Society.]* ❑ ***(cb Peter Barretta)***

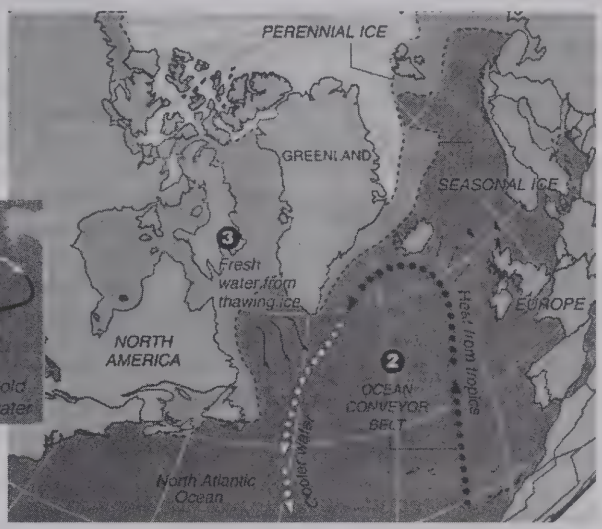
Arctic Thawing May Jolt Sea's Climate Belt

The Arctic as Catalyst for Global Climate Change

Some experts believe that changes in the North Atlantic Ocean can drastically affect climate around the globe. Now, there is new evidence that global warming is thawing Arctic ice. Some scientists fear this could eventually touch off major changes.

❶ The climate of the North Atlantic region is largely controlled by ocean currents that function like a conveyor belt to carry heat northward from the tropics.





❷ The conveyor belt derives its power from waters south of Greenland. Saltier, heavier water in the region sinks and is replaced by a current of warmer, fresher water from the tropics. This exchange warms the North Atlantic region.

❸ There is concern that an influx of fresh water from thawing ice in the Arctic might weaken the conveyor belt and halt or diminish the amount of heat it brings to the region.

❹ As a result, temperatures in the North Atlantic region could plummet and remain low, possibly disrupting the climate elsewhere by affecting atmospheric circulation.

New York Times

***New York Times*, "Science," 7 Dec 1999, by William K. Stevens**—Evidence continues to accumulate that the frozen world of the Arctic and sub-Arctic is thawing, and the findings are spotlighting two increasingly important questions:

Can what is happening in the Great White North touch off sudden shifts in climate that will transform weather and disrupt life throughout the Northern Hemisphere? Is the Arctic a key to the way in which global warming might be translated into region-by-region climatic changes?

The answers, many experts believe, may depend on how much fresh water flows into the North Atlantic Ocean as a result of melting Arctic ice and the runoff from an increase in Northern Hemisphere precipitation that some scientists say is already resulting from global warming.

The theory behind this view holds that the climate of the North Atlantic region, including Europe and eastern North America, is controlled by great ocean currents that transport heat northward from the tropics. This oceanic conveyor belt is set in motion when saltier, and therefore heavier, surface water sinks to the deep ocean in the vicinity of southern Greenland. It is replaced by warm water from the tropics that warms the North Atlantic region. Without it, the relatively mild climate of England, for instance, might be as cold as that of northern Canada.

The worry is that a great influx of fresh water from the thawing Arctic might dilute the salty current and so either halt or weaken the heat-bearing conveyor belt. This could result in a sudden, long-term drop in the North Atlantic region's temperature, a climatic disruption that would probably reverberate around the hemisphere by altering large-scale atmospheric circulation.

The worry is that a great influx of fresh water from the thawing Arctic might result in a sudden, long-term drop in the North Atlantic region's temperature.

Sudden influxes of fresh water from the Arctic appear to have shut down or weakened the oceanic heat conveyor twice in the relatively recent geological past, according to a study reported in the current issue of *Nature* by Dr. Carsten Rühlemann of the University of Bremen, Germany, and colleagues. By examining chemical clues in ocean sediments, they determined that in each case, the western tropical North Atlantic was relatively warm while waters farther north were relatively cold—as would be expected if the conveyor stopped or weakened.

Could an influx of fresh water brought about by global warming make that happen again? Recent studies lend the question new urgency. In one, reported in the December issue of the journal *Geophysical Research Letters*, scientists analyzed data collected by sonar aboard nuclear submarines and found that the floating ice cover of the Arctic Ocean has become about 40 percent thinner than it was two to four decades ago.

In another study, by nine researchers headed by Dr. Konstantin Y. Vinnikov of the University of Maryland, analyzed data from five different sources and found that sea ice in the Northern Hemisphere as a whole had decreased by about 7 percent in the last 46 years.

Many scientists say, the influx of fresh water to the North Atlantic could increase. Melting ice in the Arctic is not the only potential contributor. Water from melting glaciers in Greenland and other Arctic and sub-Arctic islands could also contribute. Last year, scientists reported that the southern half of the Greenland ice cap was melting back by about two cubic miles a year, enough to cover Maryland with a sheet one foot thick.

A third contributor to an influx of fresh water could be increased precipitation. A warmer atmosphere causes more water to evaporate from the oceans, and some scientists believe that some of this increased atmospheric moisture would be transported to the far north, where it would produce a heavier runoff of freshwater into the North Atlantic. This alone would be enough to weaken the North Atlantic heat conveyor drastically in the 21st century.

How much fresh water might be necessary to halt, slow or weaken the conveyor is a crucial question that scientists cannot yet answer. Nor do they know how close the world might be to an abrupt change in the conveyor's behavior.

What might such a change entail?

Temperature and precipitation patterns could be drastically altered, much as El Niño alters them, and Dr. Schlosser says the alteration's effects would probably be felt throughout the Northern Hemisphere. But exactly how the patterns would change and therefore what their down-to-earth effects would be, he said, is an open question. ❑ ***(cb Peter Anderson and Peter Barretta)***

Yukon Fireball Offers a Primordial Peek

NASA Photo

JSC2000-02038: Fragment of the Yukon meteor that exploded over the Yukon Territory in northwestern Canada in January 2000. The fragment is sealed in a nitrogen-filled bag to protect it from contamination. Samples of the meteorite are being analyzed at NASA's Johnson Space Center at the request of the Geological Survey of Canada, Natural Resources Canada, which is borrowing them from the finder.

New York Times, **2 May 2000, by Kenneth Chang**—A rock that fell in the Yukon in January may preserve a bit of the primordial solar system, little changed from what it was 4.5 billion years ago. During the early morning hours of Jan. 18, a fireball exploded over the Yukon: a meteor from outer space burning up in the Earth's atmosphere, with sonic booms heard in Alaska and British Columbia.

Not all of the meteor burned up, though. A local resident collected about two pounds of fragments, which resemble burnt charcoal briquettes, placed them in plastic bags and stored them in a freezer. Although the fiery journey through the atmosphere heated up the outside of the surviving rocks, the inside would have remained cold, giving researchers hope that delicate organic molecules trapped within the meteorite remained intact.

The meteorite turns out to be a type known as carbonaceous chondrites, which contain sizable quantities of carbon and organic molecules. Carbonaceous chondrites are rare—only about one in 50 meteorites found on Earth is a carbonaceous chondrite—because they burn up easily, and pieces that survive reentry weather away quickly. It has been 31 years since a carbonaceous chondrite has been recovered soon after its arrival, and never a frozen one.

"This meteorite, officially named the Tagish Lake Meteorite, is our first chance ever to look at volatile organics," said Dr. Michael E. Zolensky, a cosmic mineralogist at NASA's Johnson Space Center in Houston. About a pound of the fragments are on loan to NASA.

"It's typically a lot of organics, including amino acids," Dr. Zolensky said. In addition, "Probably there's water inside, we're betting."

Many scientists believe such meteorites seeded Earth with water and organic molecules, the building blocks of life.

The original meteor was probably the size of a bus, Dr. Zolensky said, and probably spent most of the last 4.5 billion years orbiting at the outer part of the asteroid belt near Jupiter. Its chemical composition is likely to have changed little in that time. ❑ *(cb Dr. Hal Vogel)*

Global Warming Hurting Polar Bears

The Associated Press, 15 Nov 1999, by Tom Cohen, TORONTO (AP)—Polar bears along Hudson Bay are threatened with starvation because the pack ice season when they feed on seals is dwindling—an effect blamed on global warming, according to a study by Canadian Wildlife Service.

The pack ice season on Hudson Bay has been reduced by three weeks over the past two decades, giving the polar bear population along the bay less time to feed, said the report, distributed to the media Monday by the Greenpeace environmental group.

Polar bears hibernate or fast for up to eight months a year and depend on hunting on the pack ice to sustain themselves and increase their weight. According to the study by scientists Ian Stirling, Nicholas Lunn and Jon Iacozza, the reduced ice season has resulted in polar bears returning to the mainland in worse shape with females giving birth less often.

If the trend continues, the polar bear population along western Hudson Bay—now about 1,200—would decline over the next 20-30 years, said Gary Cook, director of the Greenpeace Climate Campaign. There are more than 20,000 polar bears in the world.

The study said another effect of the shorter ice season is starving bears foraging for food in populated areas such as Churchill, Manitoba, on Hudson Bay.

"The bears will become progressively more likely to enter areas of human habitation in search of food, threatening human life and property," the study said. ❑ *(cb Billy-Ace Baker)*

Russia PM Sees Arctic Missile Launch, Criticises West

Reuters, 14 Dec 1999, by Martin Nesirky, MOSCOW—Prime Minister Vladimir Putin angrily criticised the West on Tuesday, saying it was increasingly using "the language of force" with Russia.

"We won't stand for it and we will use all the levers at our disposal—diplomatic and military-political," he told Russian news agency reporters covering his trip to watch a test launch of an advanced Topol-M nuclear missile from an Arctic base.

"Russia has everything to guarantee its security."

At the launch site in Plesetsk in the Arctic North, Putin said many thought the end of the Cold War had meant the world was a more stable place, but the reverse was true.

Interfax news agency quoted him as saying there was a trend for "certain countries and blocs, under the cover of international organisations, to try to interfere in (our) internal affairs."

"They are trying to speak with us in a language of force which we in Russia are unaccustomed to hearing," it quoted Putin as saying.

The Strategic Rocket Forces said in a statement that the Topol-M intercontinental ballistic missile was fired at a target on Kamchatka, a peninsula in Russia's easternmost region.

Topol-M, known to NATO as the SS-27, is a three-stage, single-warhead missile with a range of 10,000 km (6,200 miles).

Tuesday's test was the ninth of a Topol-M. Nuclear missile chief Vladimir Yakolev said last week a tenth was planned before the end of the year. ❑ *(cb Billy-Ace Baker)*

Effects Of Global Warming Clear to Inuit In Canada Arctic

Reuters, 20 Apr 2000, by David Ljunggren PANGNIRTUNG, Nunavut—He may be only a hunter in Canada's remote Arctic, but Steven Kooneeliusie certainly knows as much about the practical effects of global warming as any environmental scientist.

He and the other Inuit whose job it is to brave snow and ice to find caribou, seal and other animals say the signs of a gradual increase in temperature are everywhere.

"When I went hunting years ago I used to wear a full-length caribou skin coat, but now I just wear a light parka. It is so hot these days my snowmobile often overheats," Kooneeliusie said in the small town of Pangnirtung, some 1,500 miles (2,450 km) north of Ottawa nearly on the Arctic Circle.

"We're seeing animals here we've never seen before, and last year I spotted a swan. The sun is very hot, too hot. For the first time ever people are actually getting sunburned."

For the first time ever people are actually getting sunburned."

While arguments rage about whether global warming is primarily caused by pollution, the effects on the ground are all too real in the Arctic. One of the best places to observe them is the new territory of Nunavut, home to 27,000 people dotted across 750,000 square miles.

"The effect that global warming today is being felt by a lot of people in Nunavut, especially those who travel outside of communities, both hunters and campers," Sustainable Development Minister Peter Kilabuk said.

Kilabuk, based in the Nunavut capital Iqaluit, grew up in Pangnirtung and has seen for himself the changes in the fjord that the town sits on.

"I know when I was probably 8 or 10 the ice wouldn't go out until July, sometimes not until the second week of July. But over the last few years we've seen the ice go out as early as May," he said. "To us the effects are real. Climate change is here and it's a real cause for concern."

Auyuittuq—"The land that never melts"—is famed for its enormous glaciers, but locals say even they are melting. "The glaciers have receded over the last 10 years and the ice is much worse," hunter Solomon Nakoolak said.

U.S. government researchers say average global temperatures over the last 25 years alone have been increasing at a rate equivalent to 2° Celsius (4° Fahrenheit) a century.

Studies show the Arctic sea ice has also thinned over the last 30 years or so to six feet from 10 feet and has shrunk by around 6 percent since 1975.

As the Arctic gradually heats up, precipitation increases and helps push the tree line ever further to the north.

"Shrinking ice packs also mean polar bears have less time to stay out on the floes in winter looking for seals and other food sources to help them through the lean summer period. More and more sightings are being reported across Arctic Canada of hungry bears foraging for food in towns. "Last year, for the first time in a long while, we had polar bears here. A mother and a cub surprised some picnickers just outside town," Kooneeliusie said. "We did all we could to scare them off but they ignored us because they were so hungry. We had to shoot them."

Some fear that as the ground heats up airport runways and buildings could crack, a phenomenon already seen in Siberia.

They also say it is far too simplistic to talk about the Arctic as a whole heating up since some models show that while average temperatures in the eastern Arctic will rise, those in the western part will actually fall.

"There is a vast amount of research to be done. These are long-term studies which need long-term funding. There is a monumental task ahead of us to collect all the data," said Jamal Shirley, science and technology manager at the Nunavut Research Institute. ❑ ***(cb Billy-Ace Baker)***

Warming Threat

Fairfax (VA) Journal*, 7 Apr 2000, p. A2**—Gradual warming of the Arctic caused by worldwide climate change is threatening populations of birds in the polar region, according to a report issued by the World Wildlife Fund (WWF). The WWF study showed the rising temperatures will result in the northward advance of wooded areas that will eventually replace the tundra that is host to millions of birds as well as other unique species. The report cautioned that the first effects of arctic warming could be felt in as soon as 10 years and would be responsible for the extinction of several species. An additional 4-5 million geese and 7.5 million waders will be threatened in the next 70 to 100 years. ❑ ***(cb Peter Barretta)

Russians Welcome U-2

NASA Photo

The Airborne Science ER-2, a civilian version of the U-2, flew over Russia recently.

***Air Force Times*, 14 Feb 2000, p. 4**—Nearly 40 years after a U.S. Air Force U-2 spy plane was shot down and its pilot captured by the Soviet Union, a civilian version of the aircraft flew through Russian airspace in late January—with permission from the Russians.

The NASA mission was aimed at finding clues to ozone loss in the stratosphere over the arctic. One of NASA's California-based ER-2 aircraft, a variant of the U-2, passed southwest of Moscow on Jan. 27 during a six-hour flight for the international research program. The flight was closely coordinated with Russian observers. ❑ ***(cb Peter Barretta)***

Cruise Ship Freed from Antarctic Grip

***Washington Times*, 2 Feb 2000, P. A13, BUENOS AIRES**—A U.S.-operated cruise ship carrying 176 persons steamed into the open Bellingshausen Sea yesterday after an Argentine Navy icebreaker freed it from an Antarctic ice sheet, a Navy spokeswoman said.

The *Clipper Adventurer*, carrying 105 passengers and 71 crew, was sailing through the Strait of Matha down west side of the Antarctic Peninsula, about 900 miles south of Tierra del Fuego, when a change of wind unexpectedly dragged ice around it.

The Argentine Navy icebreaker *Almirante Irizar* rushed to the stranded vessel between Belgrano and Liard islands and reached the site Monday night. The 14,900-ton icebreaker took six hours to free the tourist vessel.

"The cruise liner was released into open waters at about 9:45 a.m.," Argentine Navy spokeswoman Mabel Perilli said. ❑ ***(cb Nathan Frank and Peter Barretta)***

Expert's Meeting Recommends Ship Guidelines for Polar Regions

***Antarctic Non-Government Activity News*, 12 April 2000**—A meeting of Antarctic shipping experts held in the U.K. last week is expected to recommend to the next full Antarctic Treaty Consultative Meeting (ATCM) that guidelines for shipping and related operations in Antarctic waters should be established. Despite the agreement reached in London however, it is likely to be several years before a final version of the guidelines is accepted by an Antarctic Treaty Consultative Meeting (ATCM), and longer still before they are available to non Treaty nations under the auspices of the International Maritime Organisation (IMO).

Antarctic shipping guidelines are being developed in order to raise ship safety standards and so minimize serious incidents occurring at sea in the Antarctic region, and in particular the associated environmental damage that can often flow from such events. In spite of this indications are that the proposed Antarctic ship code will not be compulsory.

The London meeting apparently considered that the primary target for the guidelines will be vessels operated by national programs and the non-government tourism industry. The majority of delegations reportedly felt however that when available they should be made available to all government and non-government vessels above 500 gross registered tonnes (GRT).

Indications from last week's meeting are that the guidelines will apply to vessels operating in Antarctic waters south of Latitude 60° which is the northern boundary of the Antarctic Treaty area. It is currently envisaged that the guidelines will be promulgated as a 'handbook of information' to ship operators and crews and will cover both environmental and safety issues.

Given that many government and non-government vessels which operate in Antarctic waters also work in the Arctic, there has been general agreement for some time that the separate guidelines being developed for both regions should be compatible in a number of key areas. The guidelines concept arose from work that the IMO has been undertaking since the early 1990s to develop a code for Arctic shipping, which originated from concerns about the increasing level of shipping activity in that region and the number of incidents that were occurring there.

Due to the need for an appropriate Arctic-Antarctic linkage, it had been planned that the London meeting would examine the latest draft of Arctic guidelines to determine which aspects of them should be included in its Antarctic counterpart. The IMO group which is developing the Arctic Code had only met the week before the Antarctic conference.

As a result the ATCM-sponsored meeting turned its attention to developing a list of 'high level principles' which concentrate only on those issues that are special to Antarctica and which do not cut across existing international instruments that already govern aspects of ship operations in Antarctic waters. The principles discussed included the hazards that are particular to Antarctic waters and matters to do with environmental protection, damage control, navigational equipment, crew training, and weather and sea ice information.

The report from last week's meeting will now be considered by the next full ATCM sometime in 2001.

ATCM-23 agreed last year that IMO endorsement of any future guidelines is necessary in order that they are available to the increasing number of vessels visiting the Antarctic region that are registered in the 100 plus nations outside the Antarctic Treaty System (ATS), but who are members of the maritime body. An increasing number of vessels that are involved in non-government operations in Antarctica are registered in States outside the ATS. ❑

Icebergs Galore in 2000

by Brian Shoemaker

With global warming being singled out as the culprit, there were only 22 ice bergs that drifted south into the Atlantic shipping lanes in 1999. This compares to an average year when hundreds of these behemoths drift south to threaten shipping in the North Atlantic. A harbinger of the future? Would the International Ice Patrol go out of business for lack of a *raison d'etre*? So it seemed. However, this year over 600 icebergs have slipped into the North Atlantic and the season is not over.

Dr. Donald Murphy, Oceanographer of the International Ice Patrol states that. "Currently we are not sure why the 1999 iceberg season was so mild. In an average year, nearly 500 icebergs pass south of 48° N, the traditional boundary below which icebergs are considered to be a menace to transatlantic shipping. In 1999, only 22 icebergs passed south of 48° N." He also points out that the average water temperature in the iceberg alley is -4° F cooler than normal in 2000.

Last season was not unique either.. A look at the record since 1914 reveals that there were 13 seasons when fewer than 25 bergs drifted into the North Atlantic; in 1924 there were only 11, in 1940 there was one and in 1966 there were none at all, for instance. If anything, periodic light iceberg years are a normal occurrence.

In a typical year, the International Ice Patrol issues routine iceberg warnings to mariners from February through July. In 1999, the Ice Patrol issued no warnings. This year there have been plenty and the season is not over! The Ice Patrol's aerial reconnaissance usually extends well into August. In 1999, routine aerial reconnaissance was suspended at the end of May. Perhaps this year it will be extended to September? ❑

Greenpeace, Whaling Fleet, End Their Antarctic Seasons

***Antarctic Non-Government Activity News*, 12 April 2000**—Vessels from the environmental group Greenpeace and the Japanese Whaling fleet completed their operations in the Antarctic region for the 1999-2000 season when they returned to port almost simultaneously last week.

The *Arctic Sunrise*, one of the ships operated by the environmental group Greenpeace, arrived at Mauritius in the southwestern Indian Ocean on 3 April after a fifty-one day voyage whose focus was on illegal fishing activities in the sub-Antarctic. 'Sunrise' left Fremantle in Western Australia on 12 February and during the voyage spent most of her time operating in the vicinity of Heard Island and Kerguelen. During her first voyage of the season late last year she was involved in an anti-whaling campaign in the area north of Enderby Land, spending a month harassing a Japanese whaling fleet which was operational in the region.

The four-ship whaling fleet returned to the Japanese port of Shimonoseki late last week after a five and a half month voyage to the Indian Ocean sector of the Antarctic southwest of Australia . Media reports indicate that a total of 439 Minke whales were taken this season, fifty more than in 1998-99. The permit issued by the Japanese Minister of Agriculture, Forestry and Fisheries for the 1999-2000 operation states that the vessels can catch up to 400 Minke whales, but goes on to say that up to 440 of this species can be taken if it is necessary 'for research purposes'.

The fleet consisted of the factory ship *Nishin Maru* of 7,575 gross tonnes, and three catcher ships with a gross tonnage of between 720 and 812 tonnes. If the pattern of activity of the fleet in Antarctic waters over the last few years continues, its operations in 2000-01 are likely to be in the Ross Sea region. ❑

Pilot Flies Open Cockpit To North Pole

The Associated Press, by Jennifer Andes, WASHINGTON (AP)—Gus McLeod knows cold better than most anyone.

The amateur aviator from suburban Maryland made history April 17 as the first pilot ever to fly to the North Pole in an open cockpit plane.

"I was cold beyond caring," McLeod, 45, said Wednesday at a news conference at the National Geographic Society, a sponsor of the two-week, 3,500-mile journey.

He even tried an electric suit—and turned it up full blast—to battle temperatures that for days hovered at 15 degrees below zero. The suit left a silver-dollar-sized third-degree burn in his stomach that he did not even feel.

"I didn't get any warmer, and that burning part wasn't good," McLeod said.

So why did he do it? "A personal challenge," he said. McLeod said he's a longtime admirer of Roscoe Turner and other early aviation pioneers. "I always like to feel I was part of that club," he said.

Even his craft, a 1939 Boeing Stearman biplane, heralded from the era of his dreams.

The cockpit was a bit tight for the six-feet-one-inch, 285-pound aviator. McLeod said his chest was just six inches from the rim of the cockpit, and that all he could move—sometimes during six hours of flight—were his arms and ankles.

Between the tight fit and extreme cold, "the suffering was unimaginable," he said.

McLeod was in the plane by himself but not completely alone. A crew from National Geographic followed in a "chase plane" and got the trip on film. It airs June 4 as part of the Explorer series.

"He squeezed this massive frame into what looked like a little, toy airplane with his head popping out of the cockpit," said show Producer Lori Butterfield. She said she teased him about not having any blood in his veins, to which he confirmed he circulates antifreeze.

McLeod weathered a tough stretch between Pickle Lake, Ontario, and Churchill, Manitoba, when engine gaskets blew, spilling oil down the side of his craft. Temperatures plunged, visibility was lost and McLeod and his craft had to rest in Churchill for a few days to wait for spare engine parts.

A film clip showed McLeod landing April 16 in Eureka, Nunavut, with a hearty, "Hey, Eureka, glad to meet ya!" And again moments after the April 17 touch down at his final destination. "I made it," he said in a satellite call to his wife, Mary.

McLeod left two items dear to him at the Pole. One is an urn bearing the ashes of his friend, Doug Duff, who spoke of making the trip to the Pole for years, right up until his death in a 1998 plane crash.

He also left his aircraft, which he hopes to have recovered.

McLeod said the engine broke for about the fourth and final time during the trip and could not be repaired. It's at 86° north and 93° west, and drifting.

"It's headed for Norway at 12 miles a day," McLeod said. "That plane loves to travel." ❑ *(cb Billy-Ace Baker)*

Adelie Penguins Wax and Wane in the Far South

Adelie penguins appear to be thriving in some areas of the Antarctic and to be n the wane in others. The reasons are complex, however, researchers are slowly unlocking the mysteries as to why.

Antarctica is experiencing a baby boom of Adelie penguins near Japan's Syowa Station and the Cape Royds rookery near the United States base at McMurdo.

The number of penguin chicks leaving nesting areas near Syowa this season jumped 40 percent after the December hatching season. "Fine weather has prevailed this season and ice did not close up holes through which food is caught" said Yutaka Watanuki a research scientist from Hokkaido University said. During the 1998-99 season, extreme weather conditions created thick ice and many of the penguin chicks died of starvation because their parents were forced to forage at unusually long distances.

At Cape Royds, the worlds southernmost penguin rookery, the number of Adelies has risen 300 percent to about 4000 breeding pairs. Sea ice shrank up to 25 percent in the Ross Sea area since the 1950s. That has made it easier for the parents to forage closer to their nests facilitating their ability to feed their young.

That has increased the Adelie population significantly said David Ainley of the Point Reyes Bird Observatory near San Francisco who has studied Antarctic penguins since 1969.

Penguins in Antarctica have a complicated relationship with sea ice. Too little and there is no place for phytoplankton to grow. Without phytoplankton there is no fish or krill, staples of the Adelie diet. Too much ice and the penguins spend precious energy trekking many miles from their colonies to the ice edge.

However, biologists worry that over the longer term, the loss of Antarctica's annual sea ice could result in the collapse of its ecosystem. According to Bill Fraser a researcher at Montana State University this appears to be happening already in the western Antarctic Peninsula. "Surface air temperatures have increased by 10 degrees Fahrenheit in the area resulting in a dramatic decrease in winter sea ice, the concurrent destruction of phytoplankton habitat and thus the loss of the food source for krill," he said. The krill supply has shrunk and the Adelie penguin numbers have decreased. Fraser points out that this is an oversimplification, but it does give one the general idea.

Adelies on the increase in some parts of Antarctica and on the wane elsewhere! Change is occurring in southern waters. Where it will lead, no one can say for sure? ❑

Anne Parkes Hawthorn

Biplane Sunk After Landing At The North Pole

The Associated Press, ANCHORAGE, Alaska (AP)—Five stranded travelers, including famed around-the-world pilot Dick Rutan, were rescued from the North Pole about 12 hours after their Russian biplane landed and then sank through the sea ice, the U.S. Coast Guard said May 15.

The travelers were stranded about a mile from the North Pole. Among the group was Rutan of Mojave, Calif., who became famous in 1986 as one of the two-person crew who made the first flight around the world without stopping or refueling. The five aboard the AN-2 biplane were accompanied by a single-engine Cessna 185, with two people aboard. The planes left Anchorage on May 8 and stopped in Fairbanks before heading to the North Pole. They arrived May 11 and spent about an hour on the ice, before setting off for Spitsbergen, Norway. They spent the weekend in Spitsbergen before heading back.

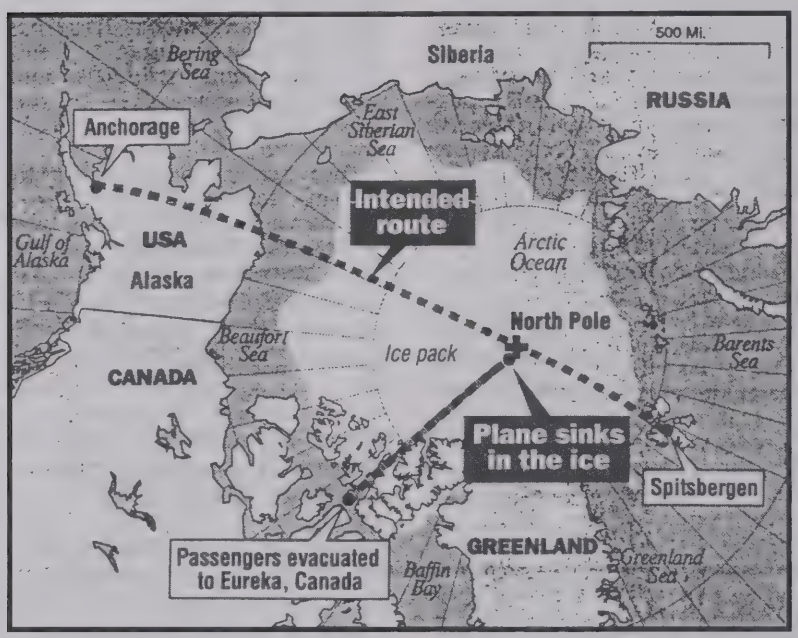
Both planes landed at the pole and the small plane took off before the ice began breaking up. However, the larger biplane couldn't get turned around in time for takeoff before it began sinking. Everyone aboard debarked safely and had enough gear to camp out on the ice for about a week.

The temperature was about 0°F. The group boarded a commercial plane which landed to evacuate them late Monday and arrived early Tuesday morning at Eureka, Nunavut, Canada, a small settlement in the Queen Elizabeth Islands west of Greenland. Another plane hired by their families transported them back to Alaska.

This was not the group's first trip to the North Pole. In 1998, they successfully retraced a 1928 trans-Arctic flight by Sir George Hubert Wilkins and Alaska pioneer aviator Carl Ben Eielson. ❑ ***(cb Billy-Ace Baker)***

POLAR RESCUE

Passengers aboard a plane that sank at the North Pole have been evacuated to a Canadian base.



Russia, Canada Start Probing Trans-Polar Air Routes

Reuters, by David Ljunggren, OTTAWA, March 1—Russia and Canada are officially investigating whether Canadian airliners should be allowed to fly across the North Pole, offering huge savings in time and fuel costs, a senior Russian official said,

Vladimir Goman, chairman of Russia's state committee for development of the north, said the two governments had agreed to set up a working group to examine what steps would have to be taken to allow regular trans-polar flights.

"Depending on the route some flying times could be cut by four or five hours. This could result in colossal savings."

The working group will put flesh on the bones of existing efforts by Canadian and Russian air traffic control authorities to see whether it is feasible for jets to use the airspace over the North Pole, which was firmly shut during the Cold War.

"We've been looking at technical issues, what kind of changes need to be made, whether the traffic and projected revenues would justify the investment," said John Morris of Nav Canada, the private company which runs the country's air traffic control service.

"If all goes well we could be seeing Canadian flights across the North Pole at the end of next year."

Nav Canada officials estimate that airlines could cut flying times by up to five hours on routes from Canada to India and China by using trans-Polar airspace.

They say that if a Boeing B747-400 travelling from Toronto to Delhi used the more direct polar route it would save around $18,670 per flight.

Russia has already allowed some polar route trial flights by foreign carriers and currently allows up to 64 international polar flights a week. But this limit cannot be increased unless Russia's creaking air control system is improved.

"We are cooperating with each other on mutually beneficial projects. We are now looking at the Arctic Bridge project, which is the transport of goods using Murmansk and Churchill — the Arctic ports of Canada and Russia," said Goman.

Ships travelling between the two ports would use the permanent northern sea route, hugging the Arctic ice cap.

"This seems to us to be a mutually beneficial project, but we (Russia and Canada) have now instructed experts and working groups to look at in detail, including how many ships there are capable of dealing with icy conditions and the amount of goods which need to be transported," said Goman. ❑ ***(cb Billy-Ace Baker)***

Announcements

Dr. W. Berry Lyons Joins BPRC

Dr. W. Berry Lyons joined the Byrd Polar Research Center as director in December. Dr. Lyons is a geochemist by training and was professor and Loper Chair of Environmental Geology at the University of Alabama prior to his joining Ohio State. He has close to 20 years of experience conducting research in polar regions and is currently the lead investigator of the McMurdo Dry Valleys-Long Term Ecological Research (LTER) site. In addition to his polar interests Dr. Lyons is also involved in water quality studies and global change interests in many other parts of the world. He greatly looks forward to working with everyone at BPRC and OSU.

Byrd Polar Research Center

BPRC Colloquy

The Third Bird Polar Colloquy, "Echoes in the Ice: Exploration and Science in Antarctica," will be held at the Byrd Polar Research Center, The Ohio State University, on October 27-28, 2000. For more information, contact Lynn Lay at 614-292-6715 or lay.1@osu.edu.

If the Mountain Can't Come To You...

Anyone interested in checking out polar mountains, glaciers, and other landmarks—particularly those named for real-life adventurers—can investigate the web site at http://mapping.usgs.gov/www/gnis/antform.html. Look for descriptions, locations, and reasons why names were assigned. On the same site, get a map showing the location of the named feature. ❑

Old Antarctic Explorers Association Formed

With an envisioned mission is to establish and perpetuate recognition for the courage, sacrifice and devotion exhibited by men and women who have supported Antarctic Research from 1954 to 1999, the Old Antarctic Explorers Association (OAEA) has been established with headquarters in Pensacola, Florida. The OAEA is in the process of applying for "Non-Profit Organization" status with the goal of obtaining a LC-130F aircraft for an "Operation Deep Freeze" exhibition. Further information can be obtained by contacting the OAEA on line at penguin64@worldnet.att.net or write to 4615 Balmoral Drive, Pensacola, FL 32504. ❑

SYMPOSIUM 2000

Our symposium in Colorado is shaping up very nicely thanks to a lot of work by Ernie Angino, Ron Weaver and Cindy Bauer. The event is scheduled for the 4-6 October at the University of Colorado, Boulder, Colorado.

Events include two full days of very informative and exciting presentations, an Awards Banquet where the new Honorary Members will be presented with their medallions and a Welcoming Icebreaker Social where a Shackleton Exhibit will be on display.

Cost will be $100 which includes the cost of the Icebreaker and the Awards Banquet making this a distinct bargain.

You should have recently received a registration form in the mail. If not please contact us by telephone/email (see the masthead on page 2) or check our web site at www-nsidc.colorado.edu/aps2000/. ❑

New Islands Discovered

Fairfax (VA) Journal*, 3 Dec 1999, p. A2**—German and Danish scientists announced the discovery of a chain of six previously unexplored islands 47 miles off the east coast of Greenland. Scientists first spotted the islands from the air two years ago after a huge block of ice broke away, then later pinpointed their exact location with satellite images. A Danish researcher named the chain the Tobias Islands after a dog that accompanied a Danish exploration team to Greenland in 1906. ❑ ***(cb Peter Barretta)

The American Polar Society membership lapel pins are available. They are a work of art, with an Emperor penguin and a polar bear emblazoned against a background of the sun riding low on the horizon of a pale blue summer sky. This is surrounded by brass lettering of the "American Polar Society" set in a field of black, symbolic of the six-month winter at each of the poles. The price is $5.00. Order using the membership form on the inside front cover.

Thank you!

Obituaries

James F. "Jake" Wiles

TimesRecord.com, by Christopher Cousins, BRUNSWICK—A man with a strong connection to the history of arctic exploration has died, and his family plans to donate some of his artifacts to the Peary-MacMillan Arctic Museum at Bowdoin College, Brunswick, Maine.

James F. "Jake" Wiles, 85, of Norway, Maine, who died March 19, visited the Arctic and Antarctic with famed explorers Adm. Richard E. Byrd and Cmdr. Donald B. MacMillan.

Wiles led a rich and active life right up until his death, said Ruth, his wife. He made voyages with MacMillan on the Arctic schooner *Bowdoin*, and he also was a member of the U.S. Antarctic Expedition with Byrd on the ice breaker *Northstar*. "(He) experienced an era in Arctic history that goes largely ignored," said Susan Kaplan. "Wiles' passing is certainly a loss." ***(cb Billy-Ace Baker)***

Canadian Dies in Antarctica

A Canadian man who worked as a contractor for the U.S. polar program in Antarctica has died of unknown causes, according to the National Science Foundation.

John G. Biesiada, 43, of St. Catharines, Ontario, was pronounced dead about 8 a.m, 7 January by medical personnel at McMurdo Station, the main U.S. scientific base in Antarctica, the NSF said in a statement. The cause of death was not known. Biesiada's body was discovered at 1 a.m. Saturday, Antarctica time. McMurdo is 17 hours ahead of Eastern Standard Time

Officials said that Biesiada had passed the medical examination required of all personnel deployed to the South Pole in the U.S. Antarctic program. ***(cb Nathan Frank)***

Joseph F. Hill

Joseph F. Hill, longtime Canyon lake resident, passed away Thursday morning, Oct. 14.

Born in Canyon, Texas, on August 24, 1913, Joseph was later active in the Boy Scouts of America, attaining the rank of Eagle Scout. At the age of 20, he was selected to go to the Antarctic with Admiral Richard E. Byrd as a tractor driver and mechanic on the second Byrd Antarctic Expedition, from 1933 to 1935.

On returning to the United States, Joseph completed his education at the University of Texas in Mechanical Engineering and joined Douglas Aircraft in the hydraulics group. Later, as assistant head of environmental control, he was instrumental in the design and introduction of the first pressurized cabin commercial airliner—the DC6.

After the war, he was Chief Engineer of the Janitrol Aero Division of the Surface Combustion Corp. in Cols, Ohio. In 1962, he moved to southern California to join the Airesearch Manufacturing Division of the Garrett Corp. He retired as Director of Laboratories in the Los Angeles Division.

[A memorial service was held Sunday, Oct. 17, at Canyon Lake Community Church.] ***(Self-obit by Joe Hill)***

Antarctic Hero Fuchs Dies at 91

Daily Mail, Nov 13, 1999—The Briton who made the first surface crossing of the Antarctic, Sir Vivian Fuchs, has died.

He was 91 and had been ill for some time.

Sir Vivian—known to friends as Bunny—was knighted after his leadership of the Commonwealth Transantarctic Expedition in 1957-58 made him a national hero. The team completed their epic 2,158-mile journey in 99 days.

He was director of the British Antarctic Survey from 1958 to 1973 and wrote a book about its work, *Of Ice and Men*, published in 1982. Going back there was "like a homecoming," he said.

He leaves a wife, Eleanor, and a daughter and son. His first wife predeceased him in 1990. ***(cb Bob Rutford)***

Alton A. Lindsey

Journal& Courier, 21 Dec 1999—Dr. Alton Anthony Lindsey, 92, of Tulsa, Okla., formerly of Lafayette, Indiana, died Sunday, Dec. 19, 1999, in his home.

Dr. Lindsey served as the vertebrate zoologist on the scientific staff of the 1933-35 Adm. Richard E. Byrd second expedition to the Antarctic. In 1937, he received the Special Congressional Medal for his biological work with Byrd and his writings on Antarctica.

He wrote 10 books, including *Natural Areas in Indiana and Their Preservation* and *the Natural Heritage of Indiana*. His 75 research papers included five on Antarctic animal life and several on the Canadian Arctic.

In 1960, 12 Lindsey Islands, located in the Antarctic, were named for him, and in 1973 a new genus and species of animal was named for him.

Surviving with his wife are a son, David Lindsey of Alexandria, VA; a daughter, Louise W. Lindsey of Tulsa; and a sister, Elizabeth Wellons of Chapel Hill, N.C. ***(cb Mrs. Alton [Elizabeth] Lindsey)***

Arnold Court, Climatologist

Arnold Court, 85, a climatologist and professor emeritus of geography at Cal State Northridge died on Sept. 13 in Denver of complications of emphysema.

Early in his career, as chief meteorologist for the U.S. Antarctic Service Expedition of 1939, Court helped to establish a weather station at Little America and produced s the first studies of the Antarctic stratosphere. He was awarded a special Congressional medal for his Antarctic service in 1943. Later in his career he was known for his research on upper-air meteorology and hydrology.

Court, who taught at Northridge State from 1962 to 1985, was a life member of the American Geophysical Union and a fellow of the American Meteorological Society, the American Association for the Advancement of Science and the American Polar Society. ***(cb Lois Court)***.

Vernon Hugo Anderson

Vernon Hugo Anderson, 72, passed away at his home in Sierra Vista, Ariz., on November 29, 1999, after a long illness. He and his wife, Carole, moved to Sierra Vista in 1997 from their New England home of 35 years.

He served in the U.S. Navy at the end of World War II and again during the Korean War.

Born and raised in Chicago, Ill., his love of the outdoors took him west to the University of Wyoming where he obtained a Bachelor's degree in geology in 1955 and a Master's degree in geology in 1959.

He served as chief glaciologist at Byrd Station, Antarctica, during the International Geophysical year of 1957-58. He was the co-leader of an exploratory traverse of 1,500 miles across uncharted territory in the Antarctic. A 13,000-foot peak in the Sentinel Mountain Range bears his name, Mt. Anderson.

He pursued a career as an air photo interpreter, first with the U.S. Army Corps of Engineers Cold Regions Research & Engineering Laboratory in Hanover, N.H., and later with his own private company, Photographic Interpretation Corporation in Hanover, N.H.

A memorial service was held at Sierra Vista United Methodist Church on Dec. 1. ***(cb Mrs Vernon [Carole] Anderson)***

First Antarctic Woman Scientist Dead at 65

By Brian Shoemaker

A lady who broke the Antarctic gender barrier has died in Columbus, Ohio. Geochemist Lois M. Jones died in March after a long illness. She was 65.

When Dr. Jones organized her all-female expedition in 1969, Antarctica had been closed to women scientists – a host of reasons were given, but in reality both NSF and the Navy were reluctant to take the steps necessary to accommodate women. Dr. Jones' scientific expedition became a reality after Jones analyzed water samples from Lake Vanda in the Antarctic Dry valleys. Afterward, she applied for and the National Science Foundation approved her proposal to continue that work. Dr. Jones recruited three other OSU female scientists to join her team.

They were flown to the Dry Valleys where they set up an all women's camp and field research project. They did as well as men– made it look routine. After their research was complete they flew to the South Pole becoming the first women ever to stand there. After the OSU expedition, gender barriers in Antarctica were dropped for women scientists as well as female Navy personnel. Today they play a major role in all aspects of Antarctic operations and research.

Bill Hartigan First Newsman to Land at the South Pole

Bill Hartigan, a hard-nosed and tough cameraman who photographed every major war since 1941 died February 1 in Schenectady, N.Y., after a long illness. He was 78. Hartigan, who earned a Bronze Star and a Purple Heart in WWII, filmed the first Israeli War, the civil war in Greece, the partition of India, the French Indo-China War, the Vietnam conflict, photographed Nixon's visit to China, among other assignments during his career. Holder of several distinguished photography awards and a five time Emmy nominee, he was one of the first photojournalists to film a war with sound (Korean War), and the first to work under extreme cold conditions (the first three Deep Freeze operations to the South Pole). His distinguished television career began when he contracted with NBC-TV in New York to film the US Navy' Operation Deep Freeze in 1955, 1956 and 1957, at the South Pole. His four documentaries on Antarctica were screened under the titles: "The Third World," "Race Against the Night," Eleven Against The Ice," and "Assault on Antarctica." ***(cb Bill's loving wife and daughters)***

Leverett G. Richards

VANCOUVER, Wash. (AP) 6 May 2000——Leverett G. Richards, who traveled to the North Pole, the South Pole and 75 countries in between as an adventurer, aviator and reporter for The Oregonian, died Thursday night. He was 92.

His first story was published in The Oregonian in 1931, when the pay was 5 cents a column inch.

In 1937, Richards was at Vancouver's Pearson Field shortly after three Russian fliers landed there, concluding the world's first flight from Russia to the United States across the North Pole.

In 1957, Richards accompanied Jack Marks, director of the Portland Zoo, on a trip to Antarctica to bring back 39 Emperor and Adelie penguins as part of the International Geophysical Year. Over the years he returned to Antarctica 14 times to report on American activities there. He is survived by his wife Virginia and two sons and two grandsons. ***(cb Peter Anderson)***

Rodney Marks , 1968-2000

Rodney Marks died Friday night (May 12) at the medical facility at the South Pole. Rodney had not felt well and experienced breathing difficulties. He went to the medical facility for assistance where he died several hours later apparently of natural causes. The details of his death are not yet available to us. His family has been notified.

Rodney was born in Geelong, Australia. He received his education from the University of Melbourne (BSc with 1st class honors) and the University of New South Wales (PhD Physics). His thesis research was on the characterization of the South Pole site for astrophysical observations.

Rodney was wintering-over for the CARA AST/RO project. He had also wintered over for the CARA/IR project in 1998. He has been a great help to both projects and to all of Antarctic Astrophysics. Rodney was a wonderful member of CARA and especially the winter-over crew. His enthusiasm and friendship will be missed by all of us.

A memorial service was held at the South Pole station Saturday evening, May 13. Rodney's family held a memorial service at 2:30 Wednesday afternoon May 17 in Torquay, Australia at a site overlooking the town and beaches, which Rodney loved. An informal gathering in Rodney's memory was held in Boston Thursday evening May 18. **[Copied from Rodney Marks Memorial Web Site http://astro.uchicago.edu/cara/marks/]** ***(cb Peter Anderson)***

Folger (Jerry) Athearn

Folger Athearn Jr., longtime Oakland resident and Businessman died February 10 at home. He was born in 1934 in Oakland, but his family traveled widely and his young life was spent abroad in North and South America. He returned to California to attend college at the University of California. After four years in the Navy, where he wintered-over in Antarctica in 1957, he worked in the field of transportation for over 31 years. ***(cb Mrs. Folger Athearn)*** ❑

Book Review

Ghosts of Cape Sabine: The Harrowing True Story of the Greely Expedition

By Leonard F. Guttridge; Putnam; 354 pages

Review by Robert Taylor

Unrelievedly grim is the phrase for "Ghosts of Cape Sabine," Leonard F. Guttridge's account of the Lady Franklin Bay expedition to the arctic commanded by Adolphus Greely of Newburyport. Twenty-five men, mostly from the Army Signal Corps, sailed on the 1881 venture; three years later, six returned. The incidents of the voyage included cannibalism, near mutiny, bureaucratic wrangling and the execution by firing squad of a private caught stealing from the ship's stores.

The horrors of an arctic nightmare receive detailed, if familiar, treatment as the party spends two years struggling to carry out its explorations. Eventually, the men were forced to retreat southward, with provisions running out, and it was during this period that Pvt. Henry evidently stole some bacon and was tried and executed. Dead members of the party served as food for the desperate survivors, according to forensic evidence Guttridge marshals. When they were rescued on Cape Sabine, they were eating shoes.

The bungled efforts, inadequate planning and administrative contrivance present a sad picture of the post-Civil War Army. In certain respects, Greely suggests Herman Wouk's Capt. Queeg, forever scouting the quicksands of accountability. His talents resided not in exploration but in telegraphy, and as the eventual head of the Signal Corps, he was influential in the modernization of military communications.

He blamed the loss of life on delays in the rescue efforts, particularly the second relief expedition led by the impetuous Ernest A. Garlington.

"In my expedition," Greely announced, "field work and scientific observations were unsurpassed. No man died, no man was disabled. The expedition, after a retreating voyage of 500 miles, landed at its assigned rendezvous with every man in health, all records intact, all scientific instruments preserved."

Foothold on Antarctica; The First International Expedition in the Eyes of its Youngest Member

By Charles Swithinbank; Book Guild Ltd, Sussex, England, 1999; ISBN 1 85776 406 4

Reviewed by Brian Shoemaker

This is the third book about his experiences in Antarctica that Charles Swithinbank has produced since 1997 a notable achievement in light that all are outstandingly written accompanied by absolutely beautiful photography.

This was Swithinbank's first expedition to Antarctica beginning a career "on the ice" that spanned the better part of five decades. This, the Norwegian-British-Swedish Antarctic Expedition, was where he cut his teeth so to speak and where he developed a passion for the Antarctic that has gripped so many of us over the years.

The story begins in Sandefjord, Norway, and takes you from there via South Georgia to Maudheim the base that they established on a floating ice shelf on the Weddell Sea.

From there Swithinbank describes numerous experiences highlighted by outstanding photography wintering-over, scientific research, traverses, discovery and death of three of the party in an unfortunate accident.

In total the expedition set standards and developed techniques which were used during the International Geophysical Year almost ten years later. A very worthwhile book for everyone interested in Antarctic science and exploration.

Only one point might be considered controversial—Belgian, Norwegian, Polish, American, and Rumanian expedition members aboard the *Belgica* in 1897 might scoff at the subtitle of the book. ❑

Letters to the Editor

To the Editor:

Your Fall-Winter issue arrived today. It's the best one yet. Sure do like the color. As you will recall, I have some good Kodachrome color transparencies at the Byrd Polar Research Institute that you, being a board member, could no doubt borrow.

Calvin L. Larsen
Sequim, Washington

To the Editor:

Thank you for reprinting in *Polar Times* my *American Legion* magazine story of Mt. Spohn in Antarctica.

Slight correction in your story is needed. Approval of Mt. Spohn was in 1966; I found out in 1975.

I approve the color very much!

Harry R. Spohn
North Platte, Nebraska

To the Editor:

As a longtime member of the [Polar Society], I always look forward to the publication [of the *Polar Times*]. I was delighted to hear that the latest research vessel was named "R.V. *Laurence* M. Gould." Larry was a great friend of mine and one who left a great legacy to polar exploration. I miss him.

Lyman Wenger
Ada, Michigan

To the Editor:

What wonderful work you continue to do, and the full-color edition is magnificent! Many congratulations. The "centerfold" is more exciting than Playboy's!

Ian M. Terris
Scotland

To the Editor:

In response to your "ask" about "cold" area articles, my note is to keep the magazine loyal to the poles and polar regions, and that may be your call as to where the line is drawn.

If a concern is filling space, then having available articles of Arctic history—exploration, etc.—would seem to be more in order, although I cannot imagine your running out of words that deal with current events at the poles.

Keep up the good work.

Brewster Sturtevant
Longmeadow, Massachusetts

New Antarctic Book Looks At Tourism Issues

***Antarctic Non-Government Activity News*, 12 April 2000**—A new book titled "The Last Continent—Discovering Antarctica" has just been released by SCP Books of the U.K. and Odyssey Publishing of Hong Kong. The author is Dr Bernard Stonehouse of the Scott Polar Research Institute in the U.K. who over the past fifteen years has conducted research aimed at assessing the real and potential impacts of Antarctic tourism. Stonehouse first went to Antarctica in 1946 and is still active in field studies in the region. Since 1989 he has travelled on most Antarctic tour vessels, including the large ships *Ocean Princess*, *Marco Polo* and the *Rotterdam*, the largest vessel to ever operate in Antarctic waters .The 228-page book covers matters such as Antarctic geography, history, wildlife and politics, as well as the impacts of Antarctic tourism. It also provides information on many tourist landing sites all around Antarctica. The new book, which is the latest of Stonehouse's many publications, has 130 colour photographs and fifteen colour maps. The book has two ISBN code numbers: 962-217-663-1 and 0-9537907-0-3. ❑

BACK COVER

One of many rocky headlands that fringe the Gerlache strait along the Antarctic peninsula. (Photo by Brian Shoemaker, November 1999) ❑